IMPORTANT

Before you remove the Wire-Seal, check the contents of this envelope with the listing on the front of the envelope. If any part is missing, your Howard W. Sams distributor will replace the entire PHOTOFACT set IF the Wire-Seal has not been damaged.

This PHOTOFACT Folder Set is

WIRE-SEALED FOR YOUR PROTECTION

to guarantee completeness of contents

DO NOT ACCEPT IF SEAL HAS BEEN BROKEN

TO OPEN ***JUST DO THIS:***

1

Take hold of the Set with both hands. Place your thumbs directly under the top wire-seal; then, divide the contents equally by putting your thumbs midway through the thickness of the Set. Now, pull the two sections apart at the top, firmly.

2

Repeat this process, pulling close to the wire-seal at the bottom, so that the set is now divided into two equal parts.

3

Continue this "pulling-apart" process with the section in which the wire-seals remain, dividing it in half.

4

Finally, remove the wire-seals left in the last section; this can easily be done with your fingernail or any sharp instrument.

Your "Safety-Sealed" PHOTOFACT Set is now ready for profit-making use . . .

IMPORTANT

Before you remove the Wire-Seal, check the contents of this envelope with the listing on the front of the envelope. If any part is missing, your Howard W. Sams distributor will replace the entire PHOTOFACT set IF the Wire-Seal has not been damaged.

The PHOTOFACT® Servicer

SET 505 ★ *Published for all users of Howard W. Sams' Photofact Folders* ★ NOV. 1960

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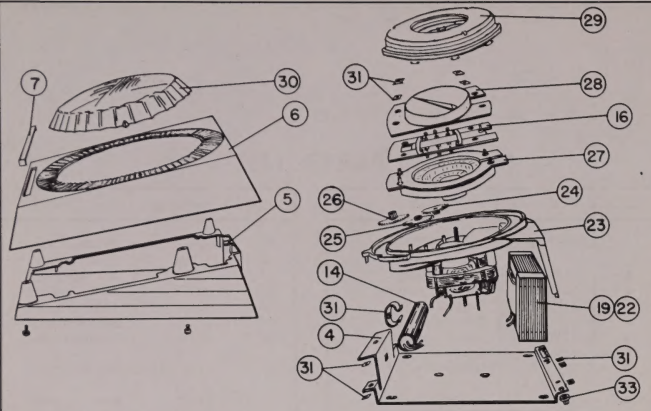
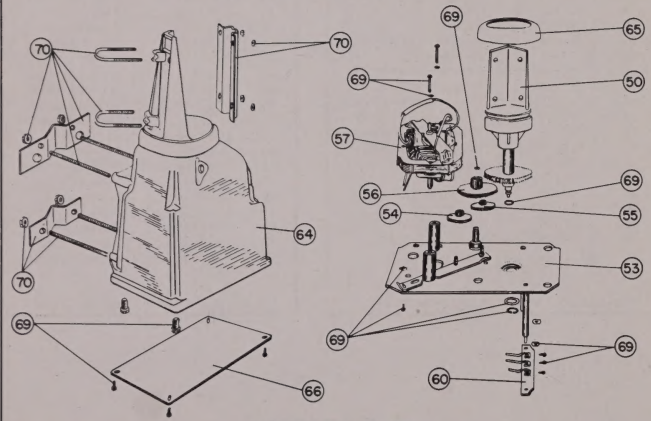
This Servicer provides you with essential data on other models or special equipment not covered in standard PHOTOFACT folders. The schematics and supplementary data included here will be of valuable help to you in servicing this equipment.

IN THIS ISSUE OF THE SERVICER:

Channel Master
Model 9524



AUTOMATIC CONTROL



AUTOMATIC DRIVE

CHANNEL MASTER MODEL 9524

GENERAL SERVICING INFORMATION

The Automatic Model turns the antenna to any new position desired by the user and automatically shuts itself off.

The synchronizing action is obtained by a motor-driven follow-up switch mechanism housed within the control unit.

CAUTION: If the control is operated without a drive unit, it is possible to overheat the follow-up motor. If a drive motor is not available, limit test operations to not more than one complete rotation every 5 minutes.

Turn control unit to extreme counter clockwise position. When both units have stopped, turn control to extreme clockwise position. When both units have stopped, unit will be in synchronization.

If control unit does not stop immediately, but appears to coast into contact with other side of follow-up switch, motor brake on control motor is mal-functioning. Follow trouble shooting "H" paragraph.

TROUBLE SHOOTING

A. General.
1. Check for loose, shorted or broken wires.
2. Check for proper cable connection sequence.

B. Inoperative Drive - No Power to Transformer:
1. Check line cord and primary of transformer.
2. Check switch for broken clip or blades and misalignment.

C. Inoperative Drive and Control - No Power to Motors:
1. Check secondary of transformer.
2. Check switch for broken clip or blades and for alignment.

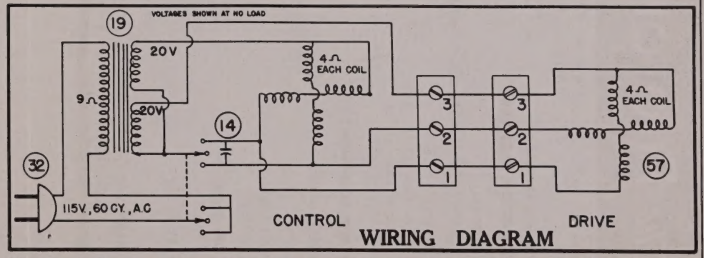
D. Inoperative Drive - Operative Control - No Power to Drive:
1. Check cable.

E. Inoperative Drive and Control - Power to Both:
1. Check capacitor.

F. Inoperative Drive - Operative Control - No Power to Motor:
1. Check motor in drive for open or shorted coils.
2. Check gear train in drive.
3. Check motor bearings in drive.

G. Operative Drive - Inoperative Control:
1. Check motor in control for open or shorted coils.
2. Check gear train in control.
3. Check motor bearings in control.

H. Control Motor Hunts Position:
1. Check motor brake for oily surfaces if coasting.
2. If brake is dry and motor coasts, check motor shaft for freedom to raise & lower.
3. If motor shaft lowers when power is removed, glue motor brake rubber washer to motor bearing cover, using DuPont household cement.
4. If motor stops properly but hunting occurs, check switch contact spacing for uniformity. **Caution:** when assembling switch, care must be taken to avoid misalignment of switch parts. Test smoothness of operation of switch before and after reassembly.



WIRING DIAGRAM

Schematic Diagram & Service Information Courtesy of Channel Master Crown Rotator Division

PARTS LIST

INDEX	PART NO.	NAME
	ROTATOR CONTROL PARTS	
1	*	Housing base
2	11728	Housing cover
3	11727	Switch rocker
4	*	Bottom cover
5	12105	Auto. housing base
6	12108	Dial skirt
7	*	Name plate
8	11968	Lens
9	12029	Meter & face
10	12143	Dial face
11	12138	Lamp socket
12	11748	Lamp
13	11911	Capacitor
14	12085	Capacitor
15	11207	Switch-push
16	12091	Switch-slide
17	12185	Trans. 110V-60 cy.
18	12136	Trans. 110V-60 cy.
19	12077	Trans. 110V-60 cy.
20	12048	Trans. 220V-50 cy.
21	12186	Trans. 220V-50 cy.
22	12187	Trans. 220V-50 cy.
23	12074	Motor & base
24	12181	First gear
25	12180	Second gear
26	12182	Third gear
27	12090	Plate-follower
28	12103	Rotating plate
29	12106	Knob-lower
30	12113	Knob-upper

* State Model No. of Rotator Control

INDEX	PART NO.	NAME
31	12193	Fastener kit
32	11088	Cord & Plug (all models)
33	12084	Strain reliever
34	12197	Fastener kit
35	11258	Switch blade
36	12141	Resistor assy.
	ANTENNA DRIVE PARTS	
50	11907	Mast assembly
51	11497-1	Plate w/studs
52	11497-2	Plate w/studs
53	11497-3	Plate w/studs
54	11428	First gear
55	11559	Second gear
56	11433	Third gear
57	11407	Motor
58	11492-1	Wire harness
59	11492-2	Wire harness
60	11492-3	Wire harness
61	11591	Position sender
62	12131	Cam
63	12132	Switch
64	12045	Housing-drive
65	11668	Umbrella
66	*	Cover
67	12192	Fastener kit
68	12191	Fastener kit
69	12195	Fastener kit
70	11939	Accessory kit

* State Model No. of Antenna Drive

PHOTOFACT® Folder with CIRCUITRACE®

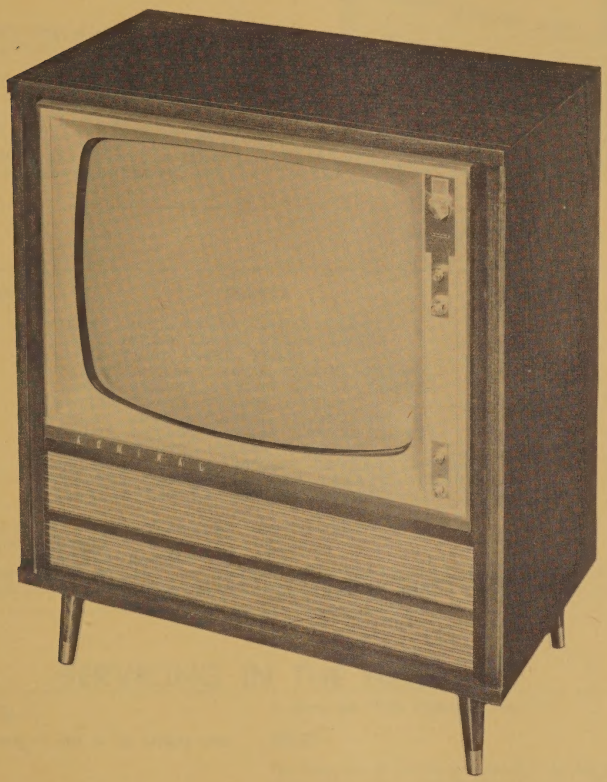
**ADMIRAL CHASSIS
18B7, B, 18UB7, B**

IMPORTANT FILING NOTICE

The TV Folder for this envelope will be found among the first folders in this complete Set of folders.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

ADMIRAL CHASSIS
18B7, B, 18UB7, B



MODEL C24K112 (CH. 18B7)

ADMIRAL CHASSIS
18B7, B, 18UB7, B

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1960 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

SET 505 FOLDER 1

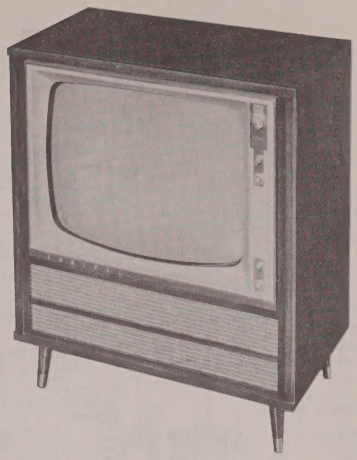
DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL C24K112

1. Remove rear cover by compressing spring clamps. Remove antenna lead. Remove rear cover.
2. Remove speaker leads.
3. Remove 4 screws holding front escutcheon (mask) to cabinet from inside the cabinet.
4. Remove chassis, picture tube, tuner, and escutcheon (as a unit) by sliding out the front of the cabinet.

PICTURE TUBE REMOVAL

It is necessary to remove the chassis, picture tube, tuner, and escutcheon (as a unit) for picture tube removal. (See "Chassis Removal".)



MODEL C24K112 (CH. 18B7)

TRADE NAME	ADMIRAL	MODELS	CHASSIS
		C24K111, C24K112, C24K113, C24K142, C24K145, L24K131, L24K132, L24K133, L24K152, L24K157, T24K110, T24K111, T24K112, T24K113	18B7
		C24K111B, C24K112B, C24K113B, C24K142B, C24K145B, L24K131B, L24K132B, L24K133B, L24K152B, L24K157B, T24K110B, T24K111B, T24K112B, T24K113B	18B7B
		C24UK111, C24UK112, C24UK113, C24UK142, C24UK145, L24UK131, L24UK132, L24UK133, L24UK152, L24UK157, T24UK110, T24UK111, T24UK112, T24UK113	18UB7
		C24UK111B, C24UK112B, C24UK113B, C24UK142B, C24UK145B, L24UK131B, L24UK132B, L24UK133B, L24UK152B, L24UK157B, T24UK110B, T24UK111B, T24UK112B, T24UK113B	18UB7B

MANUFACTURER	Admiral Corp., 3800 W. Cortland St., Chicago 47, Illinois
TYPE SET	Television Receiver
TUBES	VHF - Sixteen, UHF - Seventeen
POWER SUPPLY	110-120 Volts AC, 60 Cycle RATING VHF - 165 Watts, 1.45 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

SERVICING IN THE FIELD

SAFETY GLASS REMOVAL

The safety glass is an integral part of the picture tube.

FUSE DEVICE

A Circuit Breaker is used for low voltage power supply protection, and may be reset by depressing the reset button. (For location, see "Tube Placement Chart".)

TUNER OSCILLATOR ADJUSTMENT

To touch up the VHF Oscillator, remove Channel Selector Knob.

AGC

The AGC may be varied by means of an AGC Control. (For location, see "Tube Placement Chart".)

FOCUS

The focus may be varied by connecting the lead from pin 4 of the picture tube to various voltage points. (For location, see photo "Cabinet - Rear View".)

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Coarse adjustment of the Horizontal Hold is accomplished by the proper setting of the Horizontal Range. (For further information, see back page for "Horizontal Sweep Circuit Adjustments".)

CENTERING

Centering is accomplished by 2 magnetic rings, located behind the yoke, on the neck of the picture tube.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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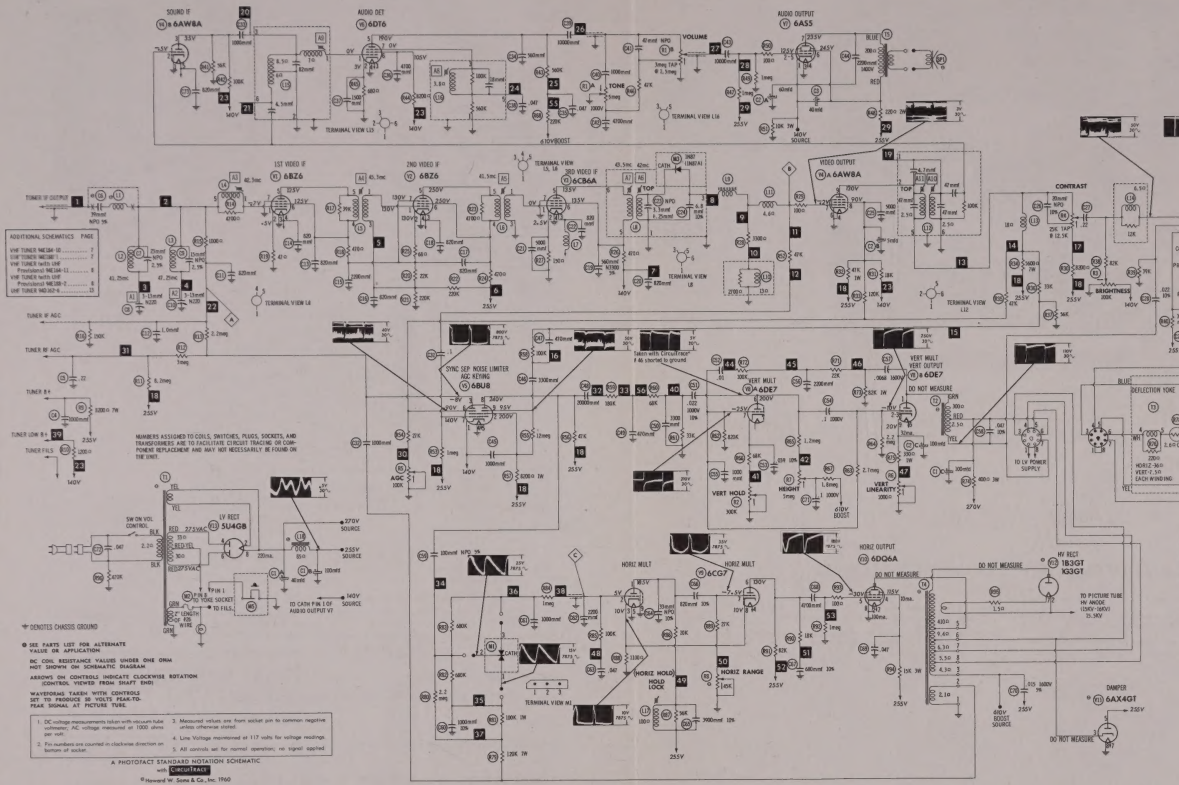
the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1960 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America


SOUND IF
AUDIO DET
AUDIO OUTPUT
VOLUME
TONE
1ST VIDEO IF
2ND VIDEO IF
3RD VIDEO IF
VIDEO OUTPUT
CONTRAST
BRIGHTNESS
FOCUS
PICTURE TUBE
SYNC SEP NOISE LIMITER AGC KEYING
RF AGC
VERT MULT
VERT OUTPUT
DEFLECTION YOKE
HORIZ MULT
HORIZ OUTPUT
HORIZ HOLD
HOLD LOCK
HORIZ RANGE
DAMPER
LV RECT
HV RECT
SW ON VOL CONTROL
TO CATH PIN 1 OF AUDIO OUTPUT VI
TO FILS.
TO LV POWER SUPPLY
TO PICTURE TUBE HV ANODE (12KV-16KV)
TERMINAL VIEW HORIZ OUTPUT TRANS T4
ADDITIONAL SCHEMATICS PAGE
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.
DENOTES CHASSIS GROUND
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.
1. DC voltage measurements taken with vacuum tube voltmeter, AC voltage measured at 1000 ohms per volt.
2. Pin numbers are counted in clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line Voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation; no signal applied.
A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE
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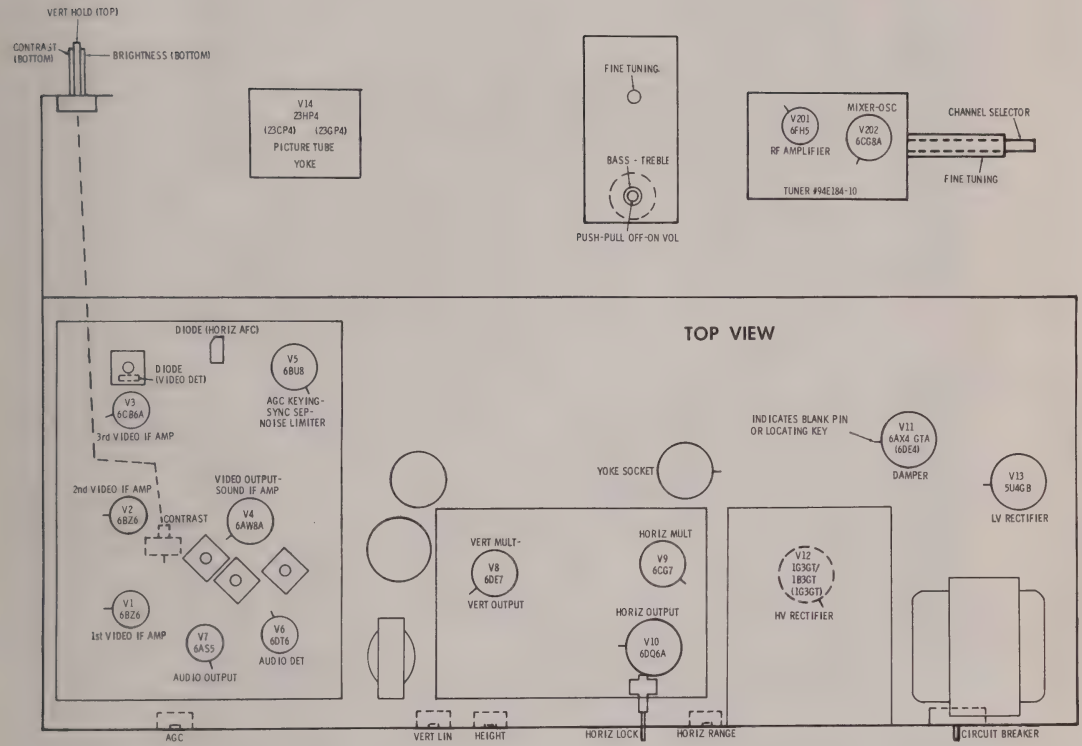
ADMIRAL CHASSIS
18B7, B, 18UB7, B

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound Circuit Breaker, V13

SWEEP FAILURE
No raster, has sound V9, V10, V11, V12, V14
No vertical deflection V8
Poor vert. linearity or foldover V8
Poor horiz. linearity or foldover V9, V10, V11
Narrow picture V9, V10, V11, V13
Vert. off freq. V8
Horiz. off freq. Diode (Horiz. AFC), V9

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, V3, Diode (Video Det.), V4
No pic, no sound, has snow V201, V202, V1
No pic, has sound, has raster V4, V14
Has pic, no sound V4, V6, V7
Overloaded picture V5

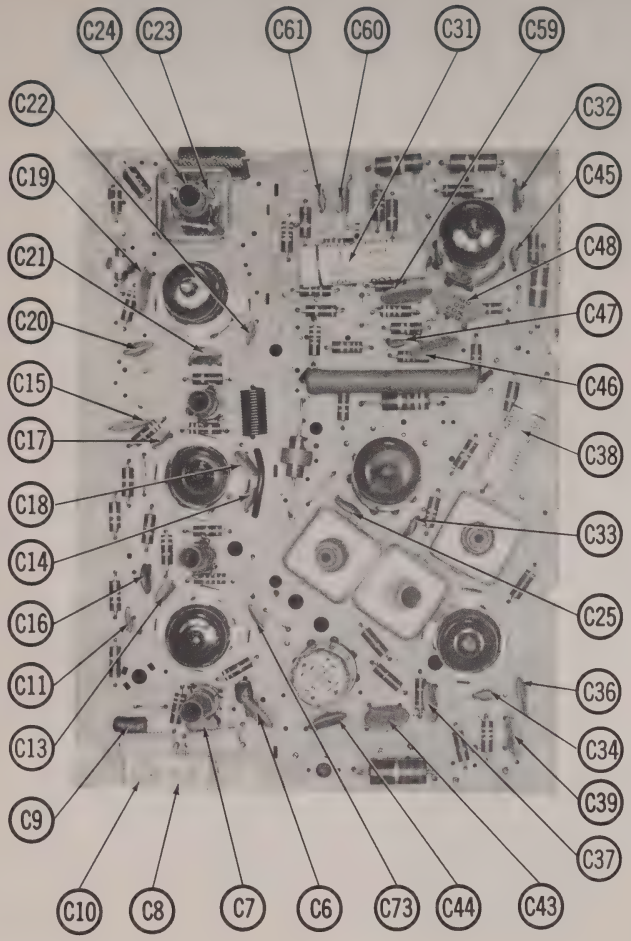
SYNC FAILURE
No vert. sync V5
No horiz. sync Diode (AFC), V5
No vert. or horiz. sync V5

CircuiTrace Numbers 1 thru 39

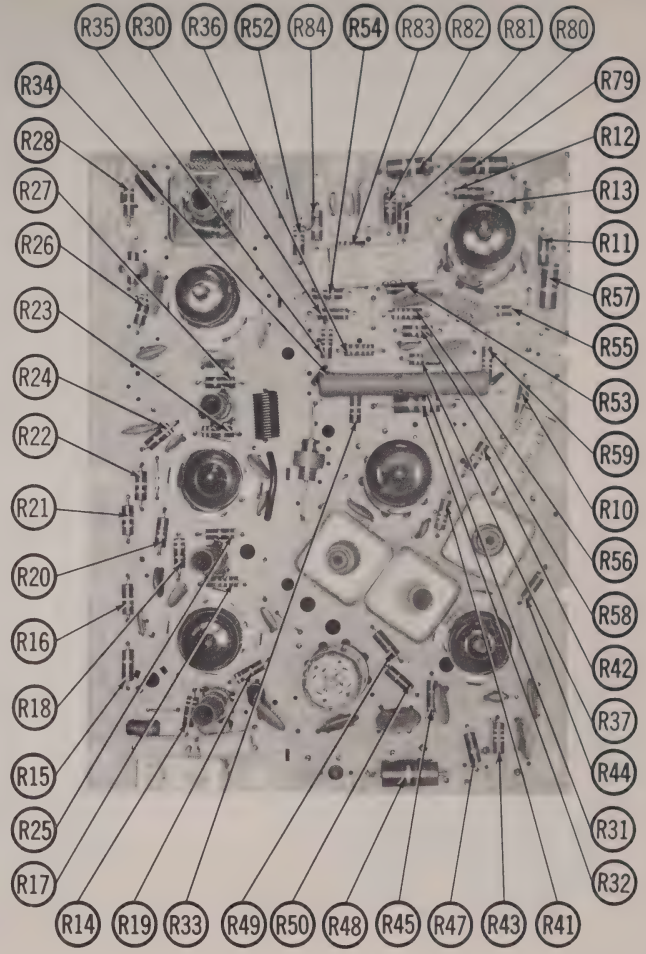
A Howard W. Sams CIRCUITRACE Photo

MAIN PRINTED BOARD

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



MAIN PRINTED BOARD-CAPACITOR IDENT.



MAIN PRINTED BOARD-RESISTOR IDENT.

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

The high voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: GENERAL CEMENT #8606, 8606L, 8282, 9295
WALSCO #2526, 2543, 2544, 2545

VIDEO IF ALIGNMENT

Connect the negative lead of a 3 volt bias supply to point Ⓐ thru a 10K resistor. Positive to chassis.
Connect a jumper across the antenna terminals.
Connect a 270mmf capacitor across the VTVM leads.
Set Contrast control fully clockwise.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to ungrounded tube shield floating over Mixer-Osc. tube (V202). Low side to chassis.	41.25 MC (Unmod)	Any non-interfering channel	DC probe thru 47K to point Ⓑ. Common to chassis. (Across Video Det. load)	A1	Use high generator output. Adjust for MINIMUM deflection.
2.	"	"	47.25MC	"	"	A2	"
3.	"	"	42.3MC	"	"	A3	Use only enough generator output to provide a usable indication on VTVM. Adjust for maximum deflection.
4.	"	"	45.3MC	"	"	A4, & Mixer Plate Coil	"
5.	"	"	41.5MC	"	"	A5	"
6.	"	"	42.0MC	"	"	A6	".
7.	"	"	43.5MC	"	"	A7	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the negative lead of a 3 volt bias supply to point Ⓐ. Positive to chassis.
Set Contrast fully clockwise.
If an external marker is used, couple loosely to sweep generator lead.
Connect a 270mmf capacitor across the scope leads.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	Direct	High side to ungrounded tube shield floating over Mixer-Osc. tube (V202). Low side to chassis.	43MC (10MC Swp)	41.25MC 42.0MC 43.5MC 45.0MC 45.75MC 47.25MC	Any non-interfering channel	Vert. Amp. thru 47K to point Ⓑ. Low side to chassis. (Across Video Det. load)		Check for response similar to Fig. 1 with markers as shown. If necessary, retouch Mixer Plate Coil to position 45.75 MC marker and A7 to position 43.5MC marker and to correct shape of curve.

SOUND IF ALIGNMENT

Tune in the strongest TV station available in the area. Adjust the set for normal operation.
Turn A8 slowly counterclockwise until a buzz is heard in the sound, then turn clockwise for maximum undistorted sound. (There may be two points approximately 1/2 turn apart at which the sound is loud. Set slug at center range of second loud point as slug is turned clockwise).
Reduce the signal at the antenna terminals (by use of an adjustable attenuator or disconnecting the antenna) until a strong hiss is heard in the sound. Carefully adjust A9 and A10 for maximum undistorted sound with MINIMUM hiss. If the hiss disappears during alignment, reduce the signal more until the hiss returns and readjust A9 and A10. If the sound is unsatisfactory, repeat procedure.

4.5MC TRAP ALIGNMENT

Adjust A11 for MINIMUM 4.5MC beat pattern in the picture. (4.5MC beat interference appears as a very fine crosshatch pattern on the screen.)

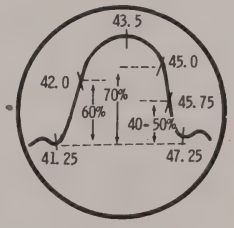
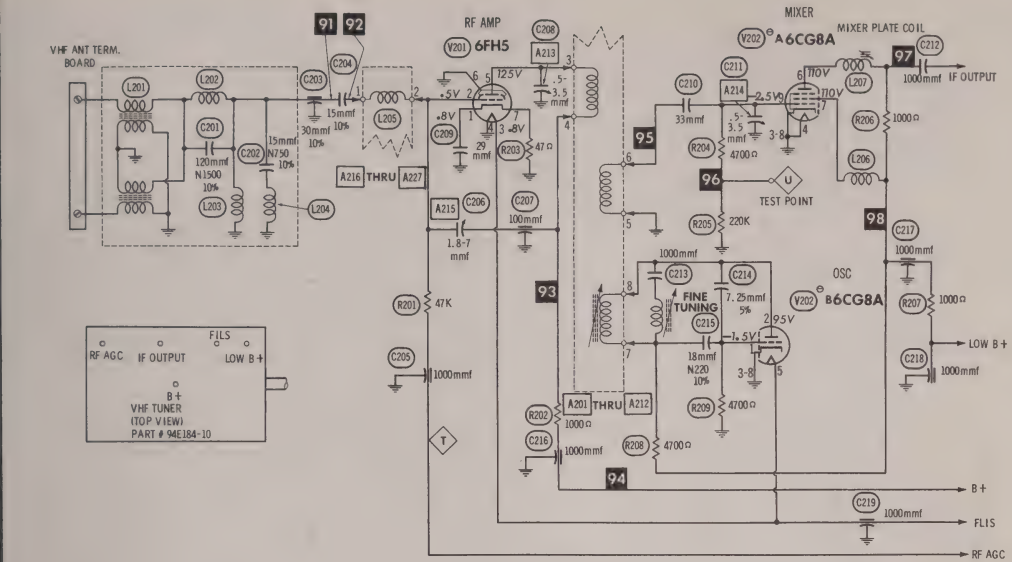


FIG.1

TUNER ALIGNMENT INSTRUCTIONS PAGE 9



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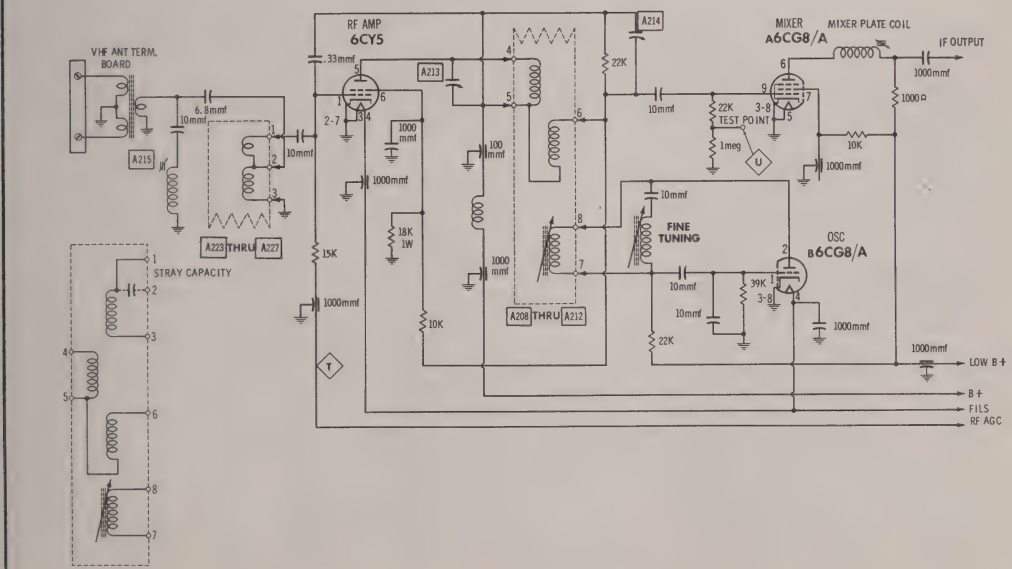
VHF TUNER 94E184-10



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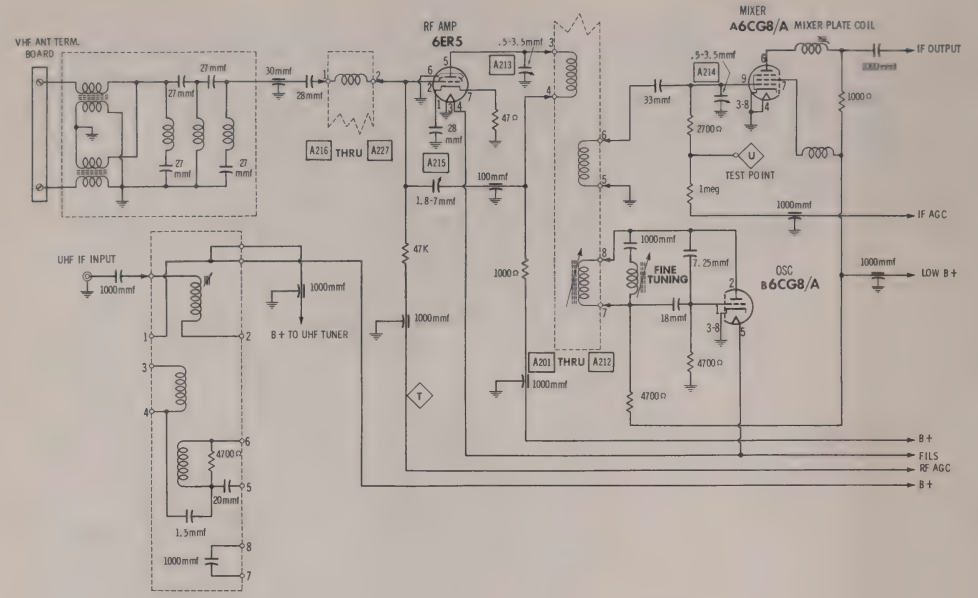
VHF TUNER 94E188-1



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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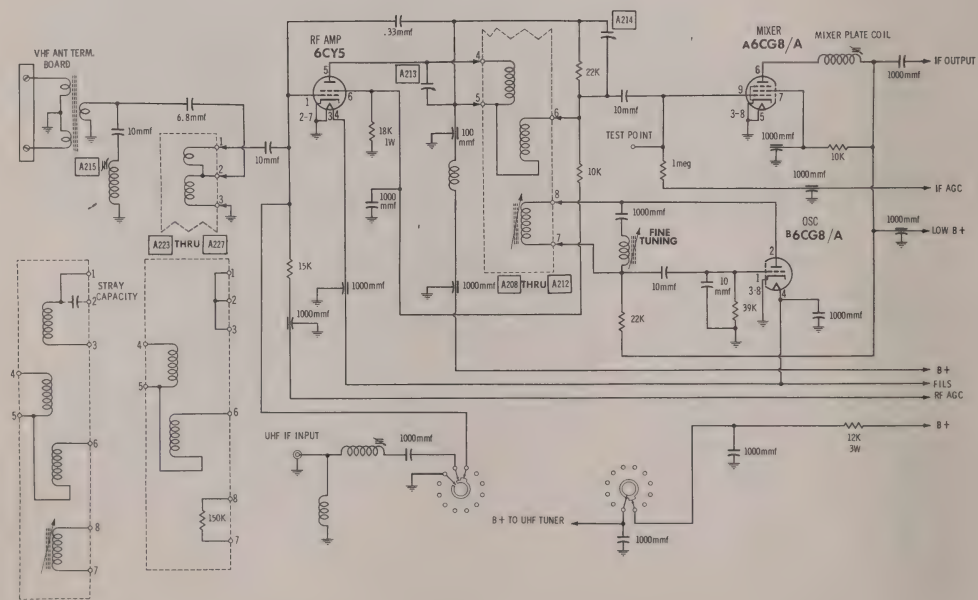
VHF TUNER with UHF PROVISIONS-94E164-11



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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VHF TUNER with UHF PROVISIONS-94E188-2

TUNER ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: A201 thru A212 ... GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8987
WALSCO # 2531
A213 thru A215 .... GENERAL CEMENT #5000, 5003, 8276, 8290
WALSCO #2512, 2525

VHF OSCILLATOR ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the Fine Tuning to the center of its range.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.
Connect variable bias to IF AGC line. Adjust bias to obtain response curve which shows no indication of overloading.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 47K across Video Det. load.	A201	Adjust to place sound marker in trap notch as in Fig. 201. Video marker should fall at 50%.
			207MC	205.25MC 209.75MC	12		A202	
			201MC	199.25MC 203.75MC	11		A203	
			195MC	193.25MC 197.75MC	10		A204	
			189MC	187.25MC 191.75MC	9		A205	
			183MC	181.25MC 185.75MC	8		A206	
			177MC	175.25MC 179.75MC	7		A207	
			85MC	83.25MC 87.75MC	6		A208	
			79MC	77.25MC 81.75MC	5		A209	
			69MC	67.25MC 71.75MC	4		A210	
			63MC	61.25MC 65.75MC	3		A211	
			57MC	55.25MC 59.75MC	2		A212	

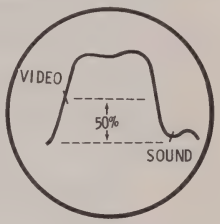


FIG. 201

VHF RF AND MIXER ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.
Coils not containing adjustable cores are adjusted by expanding or compressing coil turns.
Connect the negative lead of a 4.5 volt bias supply to point Ⓣ. Positive to chassis.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
2.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	195MC	193.25MC 197.75MC	10	Vert. Amp. thru 10K to point Ⓓ. Low side to chassis.	A213, A214, A215	Adjust A213 and A214 for maximum amplitude and symmetry with markers as shown in Fig. 202. Increase bias for MINIMUM amplitude of response curve. Without changing the bias adjust A215 to obtain MINIMUM response on the scope. Reduce bias.
3.	"	"	213MC	211.25MC 215.75MC	13	"	A216	Adjust for maximum amplitude of response similar to Fig. 202. Adjust by expanding or compressing coil turns.
			207MC	205.25MC 209.75MC	12		A217	
			201MC	199.25MC 203.75MC	11		A218	
			195MC	193.25MC 197.75MC	10		A219	
			189MC	187.25MC 191.75MC	9		A220	
			183MC	181.25MC 185.75MC	8		A221	
			177MC	175.25MC 179.75MC	7		A222	
			85MC	83.25MC 87.75MC	6		A223	
			79MC	77.25MC 81.75MC	5		A224	
			69MC	67.25MC 71.75MC	4		A225	
			63MC	61.25MC 65.75MC	3		A226	
			57MC	55.25MC 59.75MC	2		A227	

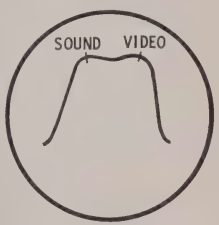


FIG. 202

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	GENERAL ELECTRIC	RAYTHEON	SYLVANIA
V1	1st Video-IF Amp	6BZ6	V7	6AU6
V2	2nd Video-IF Amp	6BZ6	V8	6EH7
V3	3rd Video-IF Amp	6CB6A	V9	6U8A
V4	Video-Output	6AW8A	V10	6CG8A
V5	Sound-IF Amp, Sync Sep. - Noise Limiter	6BU8	V11	6AX4/GTA (6DE4) *
V6	Audio Det.	6DT6	V12	HVR Rectifier
			V13	LV Rectifier

ITEM No.	USE	TYPE
V7	Audio Output	6AQ5
V8	Vert. Mult. - Vert. Output	6U8A
V9	Horiz. Mult.	6CG7
V10	Horiz. Output	6DQ6A
V11	Damper	6AX4/GTA (6DE4) *
V12	HV Rectifier	1B3GT 1B3GT (1G3GT) *
V13	LV Rectifier	5U4GB

*Alternate

PICTURE TUBE

ITEM No.	REPLACEMENT DATA					NOTES
	ADMIRAL Part No.	GENERAL ELECTRIC Part No.	RCA Part No.	RAYTHEON Part No.	SYLVANIA Part No.	
V14	23HP4				23CP4	① Aluminized
	23JP4		23CP4		23CP4	② Silver Screen "85"
	23GP4					

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA					
	CAP.	VOLT.	ADMIRAL Part No.	AEROVOX Part No.	CORNELL-DUBILIER Part No.	PYRAMID Part No.	SPRAGUE Part No.	
C1A	+80	350	67Z65-344	AFH33-39-67	BD533	*PZ327. T	TVL-3641	
B	+100	350			BR4035	*TC7B	TVA-1681	
C	+40	350						
C2A	+80	200	67D65-332	AFH3-84-80	BD578	*PZ327. T	TVD-2561	
B	+5	200			BR435	*TC7B01	TVD-50	
C	100	50					TVA-1511	
C3	40	200	67A4-21	PR8S80	BR4035	TC8S	TD-40-250	TVA-1511

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REMARKS	REPLACEMENT DATA				
				AEROVOX Part No.	CENTRALAB Part No.	CORNELL-DUBILIER Part No.	ELMENCO Part No.	MALLORY Part No.	SPRAGUE Part No.
C4	10000			BPD-5S	D5-103	BYA10S	CCD-153	H-110	5SK-S20
C5	33	400V		D4SH-33		CUB4F33	CDA-4F33-5.2%	GEM-4033	47M-F33
C6	39	NPO	5%	Note 1		DT2-39	CDQ429C	CCTO-390	CNO-429	10TCC-Q39
C7	33	NPO	2.5%			TC2-33	CDQ24C			
C8	3-13	N330		Pt. #65A35-7						
C9	10	NPO	2.5%			TC2-15				
C10	3-13	N330		Pt. #65A38-1						
C11	820			DA-S20		BD-S2L	BYA10T82	CCD-S2	B-S82	10TS-T82
C12	1.0	100V		P5SBM-1.0		CUB1W1		LDF-5-105	GEM-1	2TM-M1
C13	820			DE-S20		BD-S2L	BYA10T82	CCD-S2L	B-S82	10TS-T82
C14	820			DE-S20		BD-S2L	BYA10T82	CCD-S2L	B-S82	10TS-T82
C15	2200			BPD-D22		BD-S22	BYA10D22	CCD-S22	B-S22	5SK-D22
C16	820			DE-S20		BD-S2L	BYA10T82	CCD-S2L	B-S82	10TS-T82
C17	820			DE-S20		BD-S2L	BYA10T82	CCD-S2L	B-S82	10TS-T82
C18	820			DE-S20		BD-S2L	BYA10T82	CCD-S2L	B-S82	10TS-T82
C19	560	N330	5%	Pt. #65D8-132						
C20	820			DE-S20		BD-S2L	BYA10T82	CCD-S2L	B-S82	10TS-T82
C21	6800			BPD-006		BD-602	BYA10S6	CCD-602	B-S60	5SK-D60
C22	820			DE-S20		BD-S2L	BYA10T82	CCD-S2L	B-S82	10TS-T82
C23	3.3	NPO	± .25mmf	NPO-3E 3.3		DT2-3R3	CDV53C	CCTO-3R3	CNO-433	10TCC-V33
C24	4.6		± .5mmf	NPO-4E 4.6		DT2-4R6	CDV58C	CCTO-4R6	CNO-446	10TS-V46
C25	5000			BPD-005		BD-S03	BYA10S5	CCD-502	B-S50	5SK-D50
C26	39	NPO	10%	NPO-2E 39		DT2-390	CDQ29C	CCTO-390	CNO-429	10TCC-Q90
C27	33	400V		P4SBM-33			CUB4F33	4DP-5-336	GEM-4033	47M-F33
C28	.033	600V	10%	TVACS632-10%			CUB6S33	6DP-5-473	GEM-6033	47M-S33
C29	.047	1000V		PD8S01-47			CUB10S47	10DP-5-473	GEM-10147	10TM-S47
C30	.047	1000V		PD8S01-47			CUB10S47	10DP-5-473	GEM-10147	10TM-S47
C31	.047	600V		P4SBM-47		DF-104	CUB4F47	4DP-3-104	GEM-4047	47M-F10
C32	1000			BPD-001		BD-102	BYA10S1	CCD-102	B-102	5SK-D10
C33	1000			BPD-001		BD-102	BYA10S1	CCD-102	B-102	5SK-D10
C34	560			DE-S60		BD-S6L	L10T56	CCD-56L	B-S56	10TS-T56
C35	.047	1000V		PD8S01-047			CUB10S47	10DP-5-473	GEM-10147	10TM-S47
C36	4700			BPD-047		BD-472	BYA10D47	CCD-472	B-347	5SK-D47
C37	1500			BPD-0053		BD-153	BYA10S15	CCD-153	B-S53	5SK-D15
C38	.047	400V		P4SBM-047		BD-503	CUB4S47	4DP-3-473	GEM-4147	47M-S47
C39	10000			BPD-01		BD-103	BYA10S	CCD-103	B-103	5SK-S10
C40	1000			BPD-001		BD-102	BYA10S	CCD-102	B-S0	5SK-D10
C41	100	NPO		NPO-1E 47		DT2-47	CDQ47C	CCTO-470	CNO-447	10TCC-Q47
C42	4700			BPD-047		BD-472	BYA10D47M	CCD-473	B-347	5SK-D47
C43	10000			BPD-01		BD-103	BYA10S	CCD-103	B-103	5SK-S10
C44	2200	1400V		SVD-15-2200		DD80-223	HVC5162S	15DP-3-222	2HV-222	2GB-D22
C45	1000			BPD-001		BD-102	BYA10S1	CCD-102	B-102	5SK-D10
C46	3300			BPD-0033		BD-332	BYA10D33	CCD-332	B-333	5SK-D33
C47	470			BPD-0047		BD-471	BYA10T47	CCD-471	B-347	5SK-D33
C48	40000			BPD-03		BD-303	BYT803	CCD-303	B-330	5SK-S30
C49	470			BPD-00047		BD-471	BYA10T47	CCD-471	B-347	10TS-T47
C50	3300			BPD-0033		BD-332	BYA10D33	CCD-332	B-333	5SK-D33
C51	.022	1000V	10%	P10SCM-022			CUB10S22	10DP-5-223	GEM-1022	10TM-S22
C52	.01	600V	10%	P6SBM-01		DS-103	CUB6S	6DP-4-101	GEM-611	6TM-S
C53	.039	600V	10%	P6SBM-039			CUB6S39	6DP-3-393		6PM-S39
C54	100			BPD-001			BYA10S		GEM-1001	10TM-P10
C55	1000			BPD-01		BD-102	BYA10S1	CCD-102	B-102	5SK-D10
C56	3300			BPD-0052		BD-332	BYA10D33	CCD-332	B-333	5SK-D32
C57	.0068	1600V		P5854CM-0068		DD68-702	CUB15D68	15DP-3-703	GEM-16368	MD-D68
C58	.047	600V	10%	TVACS647-10%			CUB6S47	6DP-3-473	GEM-1615	6TM-S47
C59	100	NPO	5%			DT2-100	C507C	CCTO-101	CNO-310	10TCC-T10
C60	680			DE-S80		BD-S8L	L10T68	CCD-S2L	GP3D	10TS-D68
C61	1000			BPD-001		BD-102	BYA10S1	CCD-102	B-S10	5SK-D10
C62	3300			BPD-0052		BD-332	BYA10D33	CCD-332	B-333	5SK-D33
C63	.047	300V	10%	P2SBM-047		BD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C64	.01	1KV	10%	P1K5BM-01		DT2-33	CDQ33C	CCTO-330	CNO-433	10TCC-Q33
C65	2200		10%	1S5-0839			CM-30B-392K	MC1462-5	MB-239
C66	3900		10%	1469-00063			CM-15D-682K	MC1462-6	MB-382
C67	680		10%	1469-00068			SR5T68	CM-19B-68K	MC2349	MB-368
C68	4700			BPD-047		BD-472	BYA10D47M	CCD-472	B-347	5SK-D47

FIXED CAPACITORS (cont)

ITEM No.	RATING		REMARKS	REPLACEMENT DATA					
				AEROVOX Part No.	CENTRALAB Part No.	CORNELL-DUBILIER Part No.	ELMENCO Part No.	MALLORY Part No.	SPRAGUE Part No.
C69	047	400V		P4SBM-047		DD-503	CUB4S47	4DP-3-473	GEM-4147	47M-S47
C70	.05	1600V	5%	Pt. #64D2-59				5BDF-5-153-5%		
C71	1000	500V				P10SBM-1	CUB50P1		GEM-1001	10TM-P10
C72	047	600V				DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47
C73	820					DD-S21	BYA10T82	CCD-S2L	B-S82	10TS-T82

Note 1 May not be used in some versions.
* Not normally in distributor's stock. Available thru distributor on order to mar

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				
	RESIST-ANCE	WATTS	ADMIRAL Part No.	CENTRALAB Part No.	CLAROSTAT Part No.	CTS-IRC Part No.	MALLORY Part No.
R1A	1meg		T5B65-3	F1-S5			
B	1meg			RPL-S0	KTV-T15		WTV6156-8
C	Switch			Not Req.			
R2A	300K	½	T5D3-108	AS-50	A4T-300K-S	B1L-1N	U68
B	Shaft			AK-9	S2-3/8	S83	DS-37
R3	100K	½	T5B54-5				
R4	25K	½	T5D20-128				
	12.5K tap						
R5A	100K	½	T5D20-118	AS-36	B4T-100K-S	B4T-138	PTA1S1
B	Shaft			AK-19	Not Req.	T7M5	Not Req.
R5A	1000Ω	½	T5D20-126	AS-5	B4T-1000-S	B1L-108	TA1L
B	Shaft			AK-1	Not Req.	T7M5	Not Req.
R7	1meg	½	T5D20-19	T7-47	B4T-1meg-S	B1L-C5	PTA4S1
R8A	1meg	½	T5D20-131	T7-31	B4T-50K-S	B1L-153	PTA4SL
B	Shaft			Not Req.	Not Req.	T7M4	Not Req.

ITEM No.	INSTALLATION NOTES
	Tone
	Volume
	Push-Pull On-On Vert. Hold
	Brightness Contrast
	AGC
	Vert. Linearity
	Height
	Horiz. Range Note 1

■ "STA-LOC" Equivalent: FA58A, RUP28T105, 0681T.
Note 1. Some versions may use 80K (Part #T5D20-127), with 180K Shunt. Use replacements listed and remove shunt resistor.

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R9	4200Ω 7W	Pt. #61B24-547 (IRC #PW10-4200Ω)
R10	1200Ω	
R11	5.1meg	
R12	82K	
R13	2.2meg	
R14	680Ω	
R15	1000Ω	
R16	150K	
R17	39K	
R18	470Ω	
R19	47Ω	
R20	820Ω	
R21	330K	
R22	4700Ω	
R23	4700Ω	
R24	470Ω	
R25	680	
R26	470Ω	
R27	150Ω	
R28	3300Ω	
R29	100Ω	
R30	8200Ω	
R31	18K	
R32	47K 1W	
R33	180K	
R34	5800Ω 7W	Pt. #61B24-543 (IRC #PW10-5800Ω)
R35	47K	
R36	33K	
R37	56K	
R38	82K	
R39	39K	
R40	3.3meg	
R41	56K	
R42	100K	
R43	560K	
R44	820Ω	
R45	680Ω	
R46	47K	
R47	1meg	
R48	220Ω 2W	
R49	1meg	
R50	100Ω	
R51	10K 5W	Pt. #61B24-349 (IRC #PW5-10K)
R53	47K	
R53	1meg	
R54	27K	
R55	1meg	
R56	47K	
R57	82000 1W	
R58	100K	
R59	180K	
R60	68K	
R61	33K	
R62	330K	
R63	2.7meg	
R64	2.2meg	
R65	1.5meg	
R66	68K	
R67	1.8meg	
R68	220K	
R69	150K	
R70	470K	
R71	22K	
R72	100K	
R73	82K 1W	
R74	4000 3W	Pt. #61A1-57 (IRC #PW5-4000Ω)
R75	2200 1W	
R76	220Ω	
R77	100K	
R78	2.8Ω (COLD)	
R79	100K 1W	
R80	2.2meg	
R81	100K 1W	
R83	680K	
R84	680K	
R84	1meg	
R88	100K	
R86	10K	
R87	68K	
R88	1100Ω	
R89	27K	
R90	18K	
R91	82K	
R92	1meg	
R93	100Ω	
R94	15K 3W	Pt. #61B24-353 (IRC #PW5-15K
R95	1.5Ω	
R96	470K	(2705K) *

* Alternate

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				
		ADMIRAL Part No.	Merit Part No.	Miller Part No.	Sam Part No.	Stancor Part No.
L2	RF Choke	①				
L3	4. 25MC Trap	T3B37-4				
L3	47. 25MC Trap	T3B37-4				
L4	1st Video IF	T2C32-31				
L5	2nd Video IF	T2C32-29				
L6	3rd Video IF	T2C32-29				
L7	Fil. Choke	T3B37-3	BC-S83	4604	VP-9	RTC-8S8
L8	4th Video IF Ass'y	T2B18-3 ②				
L9	RF Choke	T3B51-4	BC-S66	4622		RTC-8S23
L10	Shunt Peaking	T3C5-41 ③	T7-302 *	6536 *		RTC-8S79 *
L11	RF Choke	T3B37-3	T7-152	4626		RTC-8S25
L12A	4.5MC Trap	T2C186-3 ④				
B	Sound Takeoff					
L13	Shunt Peaking	T3C5-20	T7-186	6571	VP-8	RTC-8S92
L14	Series Peaking	T3C5-40 ⑤	T7-187 a	6564 a	VP-5 a	RTC-8S97 a
L15A	Phase Shift	T2C308-1				
B	Sound IF					
L16	Quadrature Coil	T2C332-37				

ITEM No.	NOTES
L2	
L3	13ah
L3	400ah
L7	36ah
L8	
L10	
L11	
L12A	MB-U64
B	6TM-S67
L13	10TCC-T20
L14	10TS-D20
L15A	5SK-D50
B	5SK-D33
L16	5SK-D32

① May not be used in some versions.
② Includes R3, C23 & C34.
* Parallel with 2700Ω Resistor.
③ Wound on 2700Ω Resistor.
④ Includes two 47mmf and one 4. 7mmf capacitors.
a Parallel with 12K Resistor

COILS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA						
		ADMIRAL Part No.	Merit Part No.	Miller Part No.	Sam Part No.	Rogers Part No.	Stancor Part No.	Thordarson Part No.	Triad Part No.
L27	Horiz. Stab. (Horiz. Lock)	94C17-7	TV-163 L	6210 ①	H-102 ①	RC-110 ①	RTC-8632 ②	R8-5 I	WLC-35 I

① Enlarge mounting hole.

FILTER CHOKE

ITEM No.	RATINGS		REPLACEMENT DATA						NOTES
	CURRENT (Measured)	DC RES. Ω	INDUCTANCE (@ CURRENT 1000 ~Cy.)	ADMIRAL Part No.	Merit Part No.	Sam Part No.	Thordarson Part No.	Triad Part No.	
L18	.190A	85Ω	L: 1. Hy.	74C18-35 ①	C-3995 ②	F-801 ②	C-2343	28C94	C-24X	

① Alternate Pt. #74B18-35. ② Drill new mounting hole.

TRANSFORMER (POWER)

ITEM No.	RATING	REPLACEMENT DATA						NOTES
	PRI. SEC. 1 SEC. 2	ADMIRAL Part No.	Merit Part No.	Sam Part No.	Stancor Part No.	Thordarson Part No.	Triad Part No.	
T1	117V @ 1.45A & 2.3V @ 3A	550VCT @ 320A	5V @ 3A	80D65-23 ①			R-75BA	
	SEC. 3 SEC. 4 SEC. 5							
	6.3V @ 2A							

① Pt. #80D65-23 used in 18UB7, B Chassis.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA						
		ADMIRAL Part No.	Merit Part No.	Sam Part No.	Rogers Part No.	Stancor Part No.	Thordarson Part No.	Triad Part No.
T2	Vert. Output	79C43-20		V319				A-140X
T3	Alt. Vert. Output	79B43-20						
	Yoke Horiz. (18M0) (1064 Vert. (14. 5M8)	94D187-2		Y-110 ①	PCM2007	DY-37A ①	Y-33 ①	Y-60-1
T4	Rear Cover and Centering Device	94C152-1						D-194
	Horiz. Output Alt. Horiz. Output	79D77-8						
		79D77-8						

① Connect same as original. Use original yoke damping network if necessary. Requires new rear cover & centering device.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE	REPLACEMENT DATA						NOTES
		ADMIRAL Part No.	Merit Part No.	Sam Part No.	Stancor Part No.	Thordarson Part No.	Triad Part No.	
	PRI. SEC.							
T5	6600Ω 3-4Ω	79B8-9	A-2900	AU-908	A-3866	24S48	S-41X	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	ADMIRAL Part No.	QUAM Part No.	
SP1	6"	PM	3-4Ω	78B13A-8 *	6A16	* Used in Models C24S13, B; C24U813, B; C24R31, B; C24R13, B; C24U813, B; C24U813, B;
	6"	PM	3-4Ω	78B13-13 *	6A16	
	6"	PM	6-8Ω	78B39-14 †	5A12S. 8	* Used in Models T24S10, B; T24U810, B; T24S11, B;
	7"	PM		T8C35A-7 ‡		T24U811, B; T24U813, B; T24R13, B; T24U813, B;
						T24U813, B; T24U813, B.
						† Used in Models L24U1S3, B; L24U123, B; L24U133, B; L24U153, B; L24U163, B;
						‡ Used in Models C24U143, B; C24U1S43, B; C24U245, B; L24U1S53, B; L24U1S63, B;
						L24U257, B; L24U1S57, B

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					NOTES
	CURRENT (Measured)	ADMIRAL Part No.	GENERAL ELECTRIC Part No.	RCA Part No.	SARKES TARZIAN Part No.	SYLVANIA Part No.	
M1		83B5-6	8GC1			5U4GB	Dual Selenium Diode

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			ADMIRAL Part No.		LITTELFUSE Part No.		BUSS Part No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2	2" length of #26 wire							

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		ADMIRAL Part No.	RAYTHEON Part No.	SYLVANIA Part No.	
M3	1N87 or 1N87A		1N87 1N87A	1N87 1N87A	Video Det. (Pigtail)

PARTS LIST AND DESCRIPTIONS (Continued)

MISCELLANEOUS

ITEM No.	PART NAME	ADMIRAL PART No.	NOTES
M4	Tuner	94E184-10	VHF, STANDARD COIL REPLACEMENT Part #GG-4220A, Used in Chassis 18B7
	Tuner	94E188-1	VHF, Used in Chassis 18B7
	Tuner	94E184-11	VHF with UHF Provisions, Used in Chassis 18UB7
	Tuner	94E188-2	VHF with UHF Provisions, Used in Chassis 18UB7B
	Tuner	94B162-6	UHF, Used in all "U" Models
M5	Circuit Breaker	84B17-2	
	Printed Board	A7710-1	Main Board, Chassis 18B7 and 18UB7
	Printed Board	A7713-5	Sweep Board, Chassis 18B7 and 18UB7

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	20C32-1	Channel Selector, VHF
Knob	33C355-2	Channel Selector, UHF
Knob	20C40-1	Fine Tuning (VHF), Vertical Hold
Knob	20C32-2	Fine Tuning (UHF)
Knob	20C40-2	Volume, Brightness
Knob	33B289-1	Contrast, Tone (Bass, Treble)
Spring	18A5-7	Knob, UHF Channel Selector
Spring	18A103-1	Knob, VHF Channel Selector, UHF Fine Tuning
Spring	18A244-1	Knob, VHF Fine Tuning, Vertical Hold, Volume, Brightness
Cabinet	35E590-1	Walnut, Models C24K111, C24K111B, C24UK111, C24UK111B
Cabinet	35E590-2	Mahogany, Models C24K112, C24K112B, C24UK112, C24UK112B
Cabinet	35E590-3	Blond, Models C24K113, C24K113B, C24UK113, C24UK113B
Cabinet	35E591-2	Mahogany, Models C24K142, C24K142B, C24UK142, C24UK142B
Cabinet	35E591-5	Maple, Models C24K145, C24K145B, C24UK145, C24UK145B
Cabinet	35E592-1	Walnut, Models L24K131, L24K131B, L24UK131, L24UK131B
Cabinet	35E592-2	Mahogany, Models L24K132, L24K132B, L24UK132, L24UK132B
Cabinet	35E592-3	Blond, Models L24K133, L24K133B, L24UK133, L24UK133B
Cabinet	35E593-2	Mahogany, Models L24K152, L24K152B, L24UK152, L24UK152B
Cabinet	35E593-7	Fruitwood, Models L24K157, L24K157B, L24UK157, L24UK157B
Cabinet	34E153-1	Charcoal, Models T24K110, T24K110B, T24UK110, T24UK110B
Cabinet	34E153-2	Bronze, Models T24K111, T24K111B, T24UK111, T24UK111B
Cabinet	34E153-3	Mahogany, Models T24K112, T24K112B, T24UK112, T24UK112B
Cabinet	34E153-4	Blond, Models T24K113, T24K113B, T24UK113, T24UK113B
Leg	35E592-51	Cabinet, Models L24K131, L24K131B, L24UK131, L24UK131B
Leg	35E592-52	Cabinet, Models L24K132, L24K132B, L24UK132, L24UK132B
Leg	35E592-53	Cabinet, Models L24K133, L24K133B, L24UK133, L24UK133B
Leg	35E590-51	Cabinet, Models C24K111, C24K111B, C24UK111, C24UK111B
Leg	35E590-52	Cabinet, Models C24K112, C24K112B, C24UK112, C24UK112B
Leg	35E590-53	Cabinet, Models C24K113, C24K113B, C24UK113, C24UK113B

WIRING DATA

High Voltage Lead	Use BELDEN No.	8869
Shielded Hook-up Wire	Use BELDEN No.	8885 (Single Conductor)
		8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No.	8530 (Solid) Available in Ten Colors
		8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No.	8874
300Ω Tuner Input Lead	Use BELDEN No.	8225
300Ω Antenna Lead-in	Use BELDEN No.	8230 or 8275
Antenna Rotor Cable	Use BELDEN No.	8484 (Flat) or 8484 (Round) - 4 Conductor
		8485 (Round) - 5 Conductor
		8488 (Round) - 8 Conductor

TUNER PARTS LIST AND DESCRIPTIONS 94E184-10

TUBES

	• GENERAL ELECTRIC	• RAYTHEON	• SYLVANIA •

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V201	RF Amp.	6FH5	V202	Mixer - Osc.	6CG8A (6CG8) *

* Alternate

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C201	120 N1500 10%	Pt. #65D10-136				*		
C202	15 N750 10%		N750-DI 15	DTN-15	C10Q15U	CCTN-150	CN7-415	10TCU-Q15
C203	30 10%	Pt. #94E184-94						
C204	15 10%		NPO-DI 15	DTZ-15	C10Q15C	CCTO-150	CNO-415	10TCC-Q15
C205	1000		EF-001	MFT-1000		CCF-102	CT280A	
C206	1.8-7	Pt. #94E184-97		829-7				
C207	100		EF-0001	MFT-100				
C208	.5-3.5			829-3		CV-1	CT565	
C209	28			TCZ-27	C10Q27C	CCTO-280	CNO-427	10TCC-Q27
C210	33		NPO-DI 33	DTZ-33	C10Q33C	CCTO-330	CNO-433	10TCC-Q33
C211	.5-3.5			829-3		CV-1	CT565	
C212	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C213	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C214	7.25 5%	Pt. #94E184-102			C10V7C			

TUNER PARTS LIST AND DESCRIPTIONS (Continued)

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C215	18 N220 10%	Pt. #94E184-101				*		10TCR-Q18
C216	1000		EF-001	MFT-1000		CCF-102	CT280A	
C217	1000		EF-001	MFT-1000		CCF-102	CT280A	
C218	1000		EF-001	MFT-1000		CCF-102	CT280A	
C219	1000		EF-001	MFT-1000		CCF-102	CT280A	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R201	47K	
R202	1000Ω	
R203	47Ω	

ITEM No.	RATING	REMARKS
R204	4700Ω	
R205	220K	
R206	1000Ω	

ITEM No.	RATING	REMARKS
R207	1000Ω	
R208	4700Ω	
R209	4700Ω	

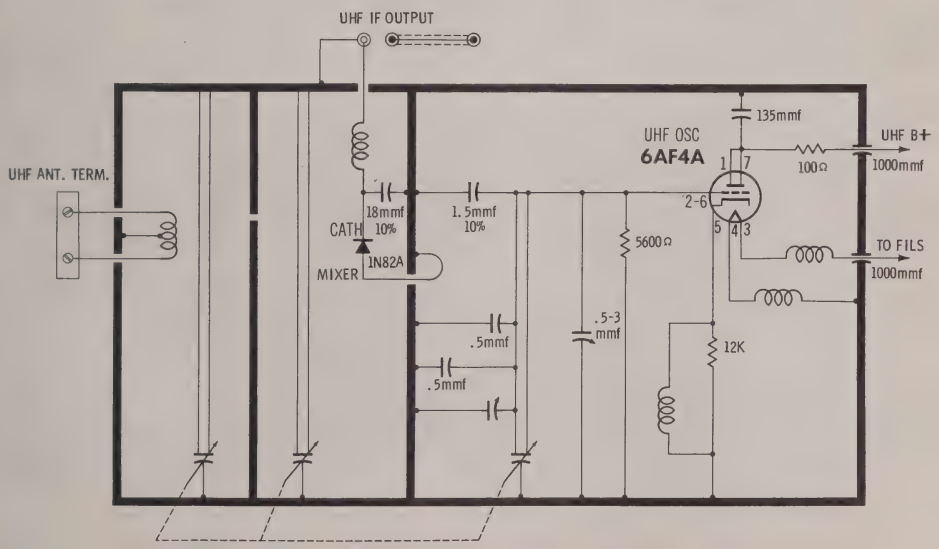
COILS (RF-IF)

ITEM No.	USE	ADMIRAL PART No.	NOTES
L201	Ant. Trans.	700B169	
L202	Trap Coil	94E184-66	
L203	Trap Coil	94E184-64	
L204	Trap Coil	94E184-65	
L205	Ant., RF, Mixer		
A	and Osc. Coils	94E184-52	Channel 2
B	"	94E184-53	Channel 3
C	"	94E184-54	Channel 4
D	"	94E184-55	Channel 5
E	"	94E184-56	Channel 6

ITEM No.	USE	ADMIRAL PART No.	NOTES
L205	Ant., RF, Mixer		
F	and Osc. Coils	94E184-57	Channel 7
G	"	94E184-58	Channel 8
H	"	94E184-59	Channel 9
I	"	94E184-60	Channel 10
J	"	94E184-61	Channel 11
K	"	94E184-62	Channel 12
L	"	94E184-63	Channel 13
L206	RF Choke	94E184-67	
L207	Mixer Plate Coil	94E184-69	

MISCELLANEOUS

ITEM No.	PART NAME	ADMIRAL PART No.	NOTES
	Shaft and Cam Assembly	94E184-83	Fine Tuning
	Shaft and Coil Support Assembly	94E184-85	



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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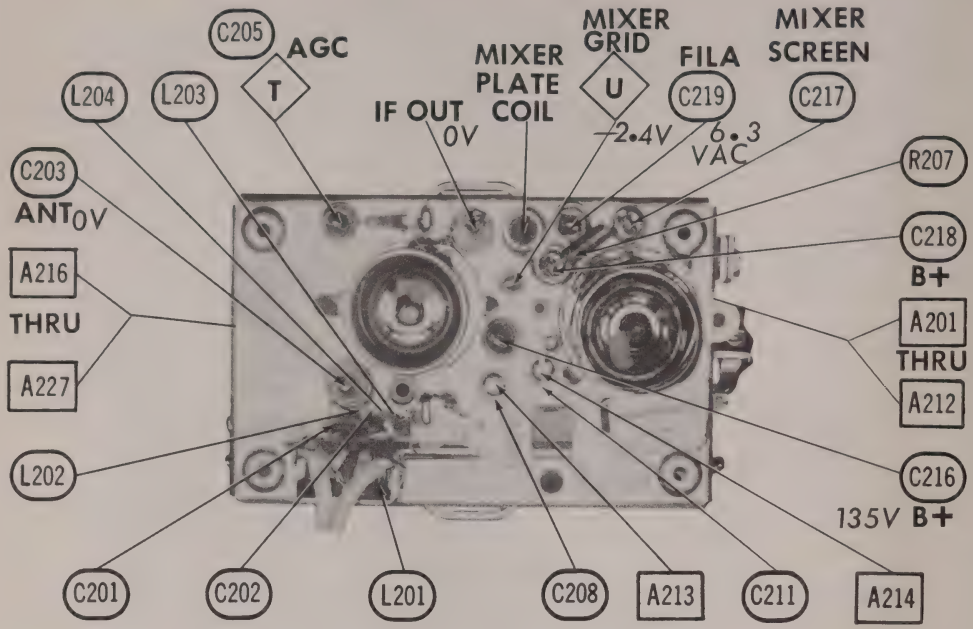
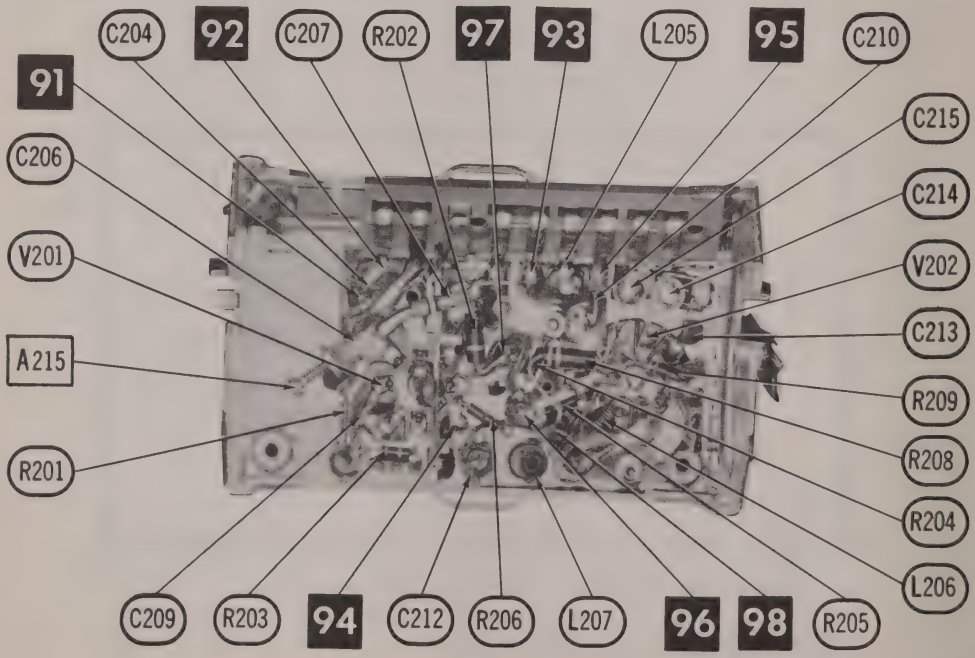
UHF TUNER 94D162-6



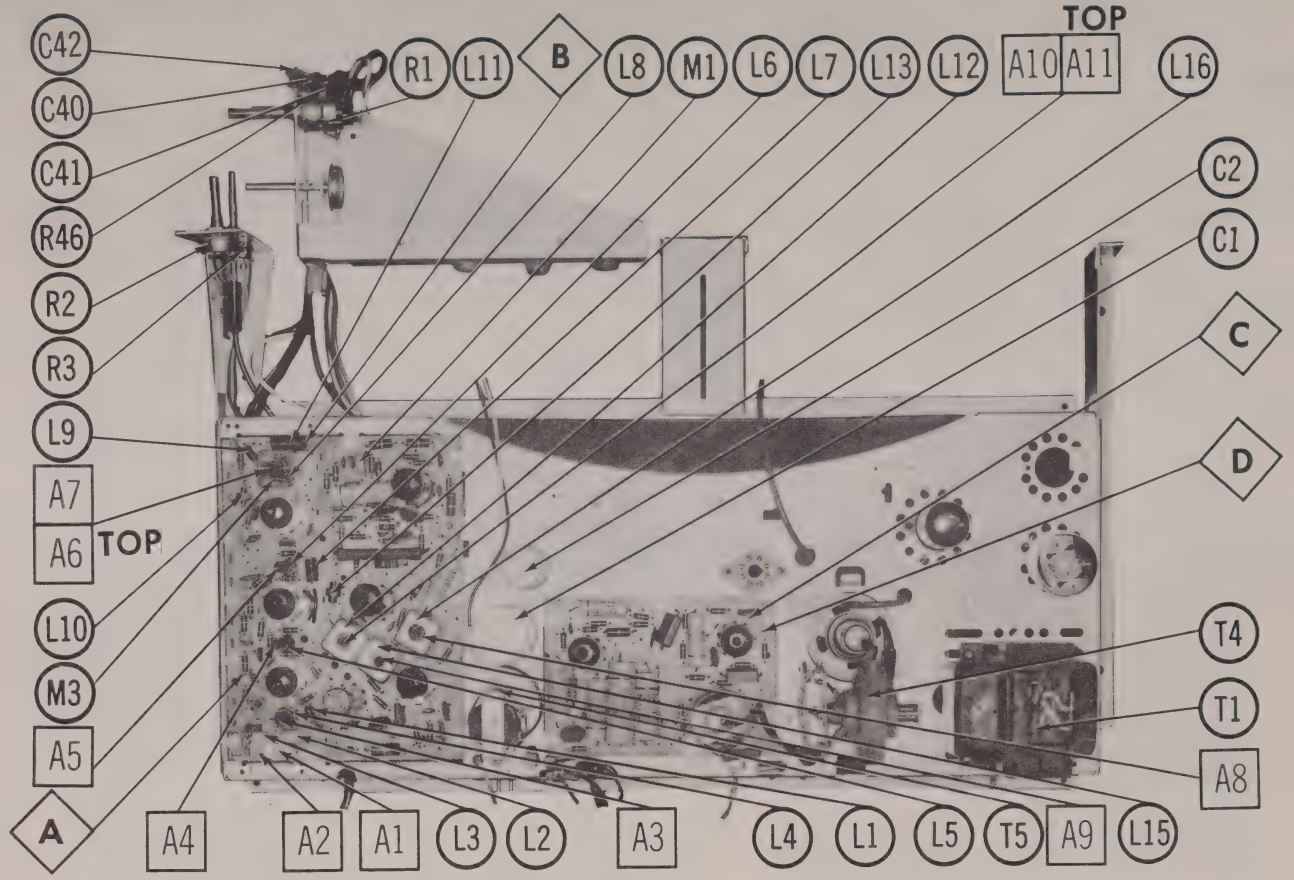
VHF TUNER 94E184-10-TOP VIEW



A Howard W. Sams CIRCUITRACE® Photo

VHF TUNER 94E184-10
BOTTOM VIEW

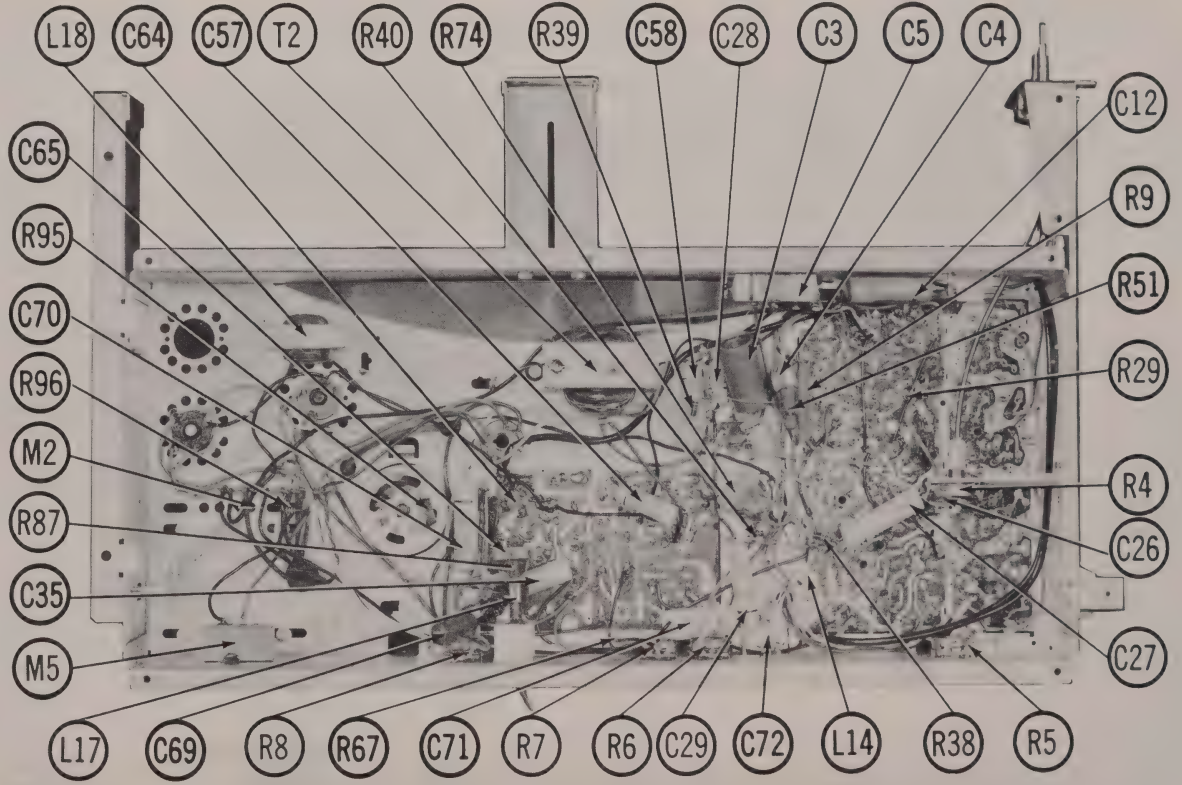
ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



CHASSIS - TOP VIEW

ADMIRAL CHASSIS
18B7, B, 18UB7, B

FOLDER 1



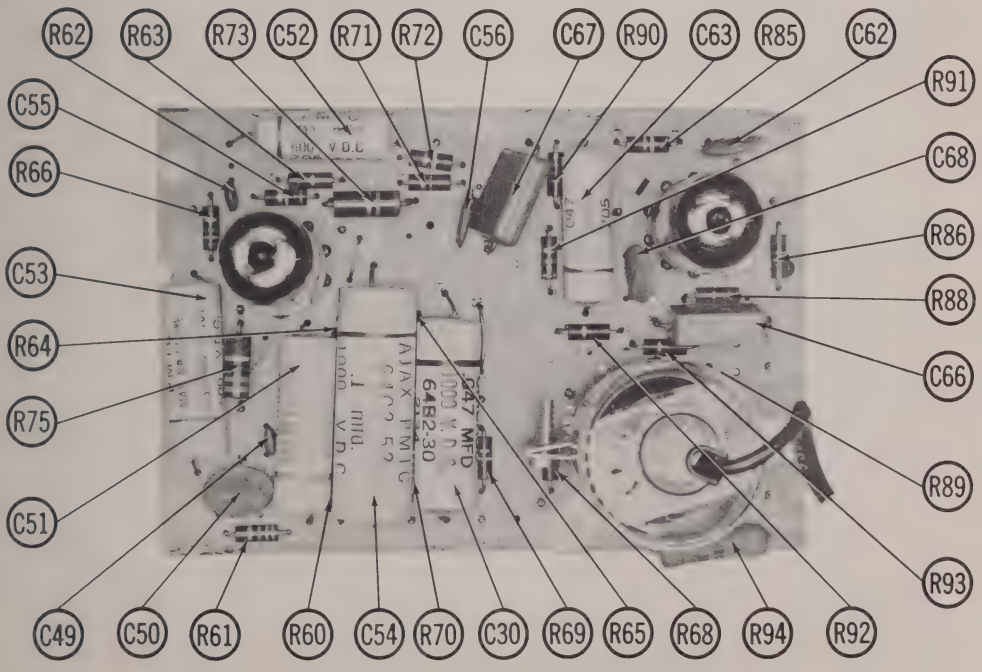
CHASSIS - BOTTOM VIEW

CircuiTrace Numbers 40 thru 56

A Howard W. Sams CIRCUITRACE Photo

SWEEP PRINTED BOARD

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED

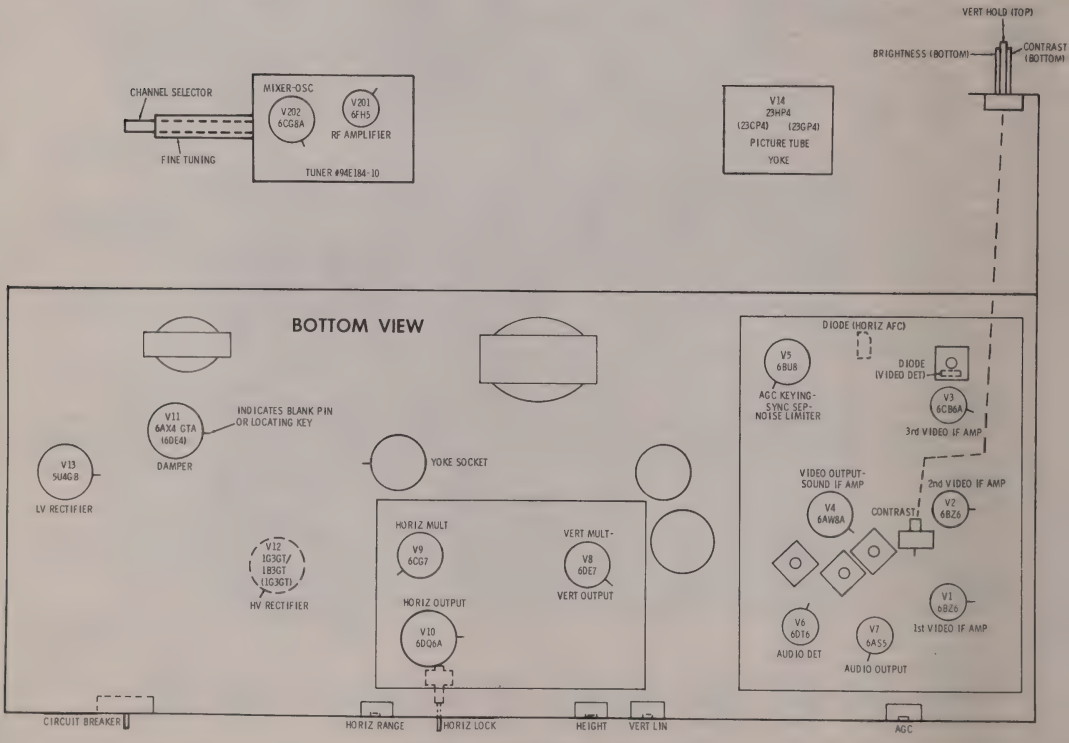


SWEEP PRINTED BOARD - CAPACITOR & RESISTOR IDENT.

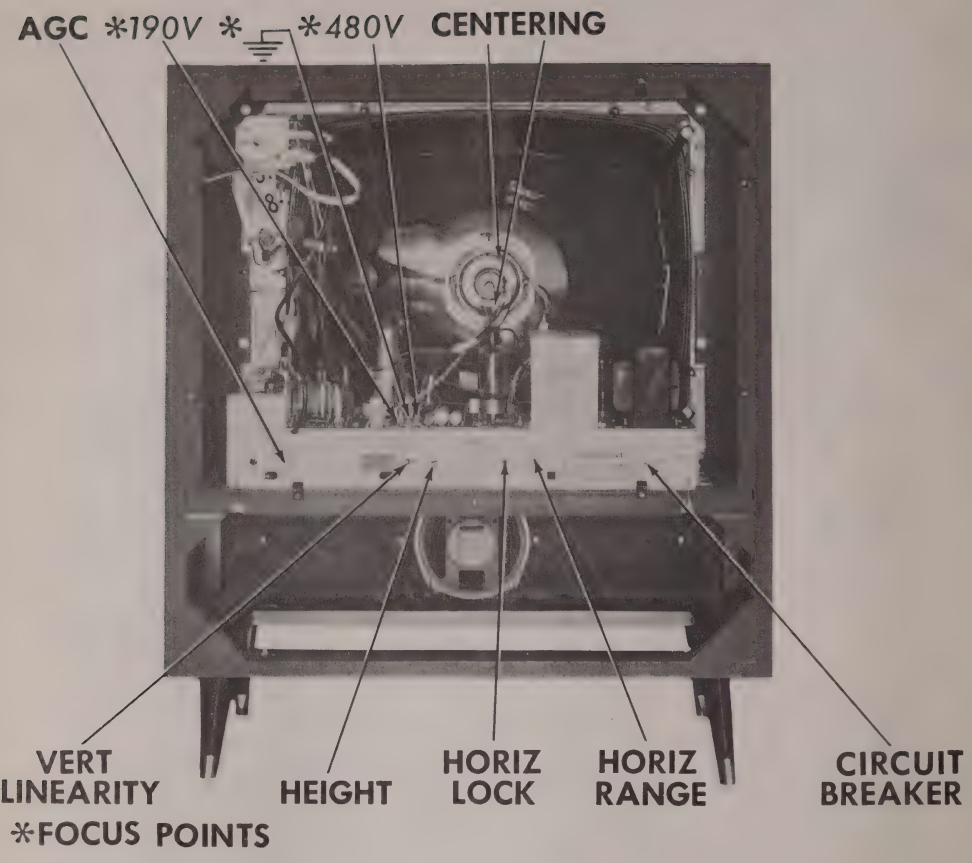
RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BZ6	150K	47Ω	0Ω	.1Ω	▲470Ω	▲470Ω	0Ω		
V2	6BZ6	150K	170K	.1Ω	0Ω	†555Ω	†555Ω	170K		
V3	6CB6A	0Ω	150Ω	.1Ω	0Ω	■470Ω	■470Ω	0Ω		
V4	6AW8A	0Ω	100K	■45K	0Ω	.1Ω	0Ω	3400Ω	†30K	†5000Ω
V5	6BU8	■0Ω	†8200Ω	2.3meg	0Ω	.1Ω	● †30K	†1meg	†47K	†12meg
V6	6DT6	15Ω	680Ω	.1Ω	0Ω	†780K	■8200Ω	560K		
V7	6AS5	¶	550K	0Ω	.1Ω	NC	†300Ω	†525Ω		
V8	6DE7	†700Ω	NC	1.5meg	0Ω	.1Ω	● †4.4meg	750K	● 220K	● 800Ω
V9	6CG7	†10K	2.5meg	1100Ω	.1Ω	0Ω	†82K	● 52K	1100Ω	0Ω
V10	6DQ6A	NC	0Ω	NC	†15K	1meg	NC	.1Ω	0Ω	TOP CAP †9Ω
V11	6AX4GTA	NC	NC	¶	NC	†85Ω	NC	.1Ω	0Ω	
V12	1G3GT 1B3GT	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP †420Ω
V13	5U4GB	NC	¶	NC	33Ω	NC	30Ω	NC	¶	
V14	Z3HP4	.1Ω	39K	†3.3meg	†100K	NC	NC	● 95K	0Ω	
V201	6FH5	47Ω	4.8meg	0Ω	.1Ω	†9200Ω	0Ω	47Ω		
V202	6CG8A	4700Ω	■7000Ω	0Ω	0Ω	.1Ω	■3200Ω	■2200Ω	0Ω	225K
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
● THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
† MEASURED FROM PIN 8 OF V13.
‡ MEASURED FROM PIN 3 OF V11.
NC NO CONNECTION
■ MEASURED FROM 140V SOURCE.
▲ MEASURED FROM PIN 7 OF V2.



TUBE PLACEMENT CHART



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably with a test pattern. Adjust the Brightness and Contrast Controls for a normal picture.

Short out the AFC voltage by connecting a clip lead from point Ⓒ to chassis. Connect a .22mfd, 400 volt capacitor from point Ⓓ to chassis.

Adjust Horizontal Range to the point where the picture is almost stable horizontally.

Remove the capacitor from point Ⓓ and adjust the Horizontal Lock to the point where the picture is almost stable horizontally.

Remove the clip lead from point Ⓒ and chassis. Adjust the Horizontal Lock until the picture is synchronized horizontally.

PHOTOFACT® Folder

AIRLINE MODELS WG-5200A, -5209A, -5210A, -5300A, -5309A, -5310A

IMPORTANT FILING NOTICE

The TV Folder for this envelope will be found among the first folders in this complete Set of folders.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

AIRLINE MODELS WG-5200A, -5209A, -5210A, -5300A, -5309A, -5310A

MODEL WG-5200A

AIRLINE MODELS WG-5200A, -5209A, -5210A, -5300A, -5309A, -5310A

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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SET 505 FOLDER 2

PHOTOFACT® Folder

AIRLINE MODELS WG-5200A, -5209A, -5210A, -5300A, -5309A, -5310A

AIRLINE MODELS WG-5200A, -5209A, -5210A, -5300A, -5309A, -5310A

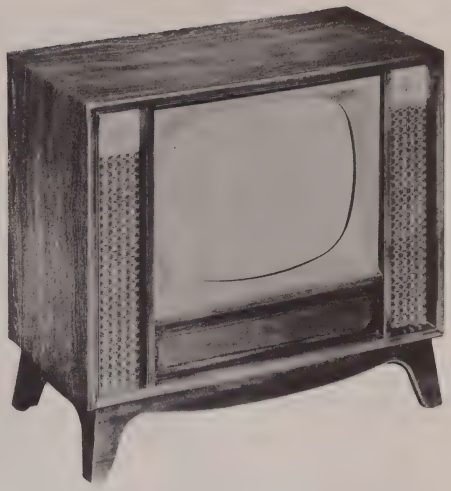
DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL MODEL TV2-9591A

1. Remove 7 push-on type knobs in front of cabinet.
2. Remove 8 wood screws holding rear cover. Remove rear cover.
3. Remove picture tube socket, yoke plug, speaker leads, and 2 screws holding mounting bracket for controls.
4. Remove 4 screws holding tuner and ground rod from chassis to tuner.
5. Remove high voltage lead.
6. Remove 4 chassis bolts under cabinet.
7. Remove chassis.

PICTURE TUBE REMOVAL

1. Follow steps 1 thru 7 of "Chassis Removal".
2. Remove 2 bolts holding mounting at bottom of cabinet. Remove 4 wood screws holding mounting at top.
3. Pull picture tube straight out.



MODEL WG-5200A

CAUTION

ONE SIDE OF AC LINE CONNECTED TO CHASSIS.

TRADE NAME	AIRLINE Models WG-5200A, WG-5209A, WG-5210A, WG-5300A, WG-5309A, WG-5310A
SUPPLIER	Montgomery Ward & Co., 619 Chicago Avenue, Chicago, Illinois
TYPE SET	Television Receiver
TUBES	VHF - Fourteen, UHF - Fifteen
POWER SUPPLY	110-120 Volts AC, 60 Cycle RATING 140 Watts, 1.3 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

SERVICING IN THE FIELD

SAFETY GLASS REMOVAL

Remove 5 wood screws holding the trim strip at the top edge of the safety glass. Tilt glass out and remove.

FUSE DEVICE

A 7.5Ω fusible resistor is used for low voltage power supply protection. (For location, see R63 in Photo "Chassis - Top View.)

TUNER OSCILLATOR ADJUSTMENTS

To touch up the VHF Oscillator, remove Channel Selector and Fine Tuning Knobs.

AGC

The AGC may be varied by means of a range switch. (For location, see "Tube Placement Chart".)

HORIZONTAL OSCILLATOR FIELD ADJUSTMENTS

The Horizontal Frequency Slug is used for the Horizontal Hold. (For location, see "Tube Placement Chart".)

HORIZONTAL DRIVE

The Horizontal Drive may be varied by a Horizontal Drive Trimmer. (For location, see "Tube Placement Chart".)

BUZZ ADJUSTMENT

To eliminate intercarrier buzz, adjust the Buzz control for MINIMUM buzz and maximum sound. (For location, see "Tube Placement Chart".)

CENTERING

Centering is accomplished by 2 magnetic rings, located behind the yoke, on the neck of the picture tube.

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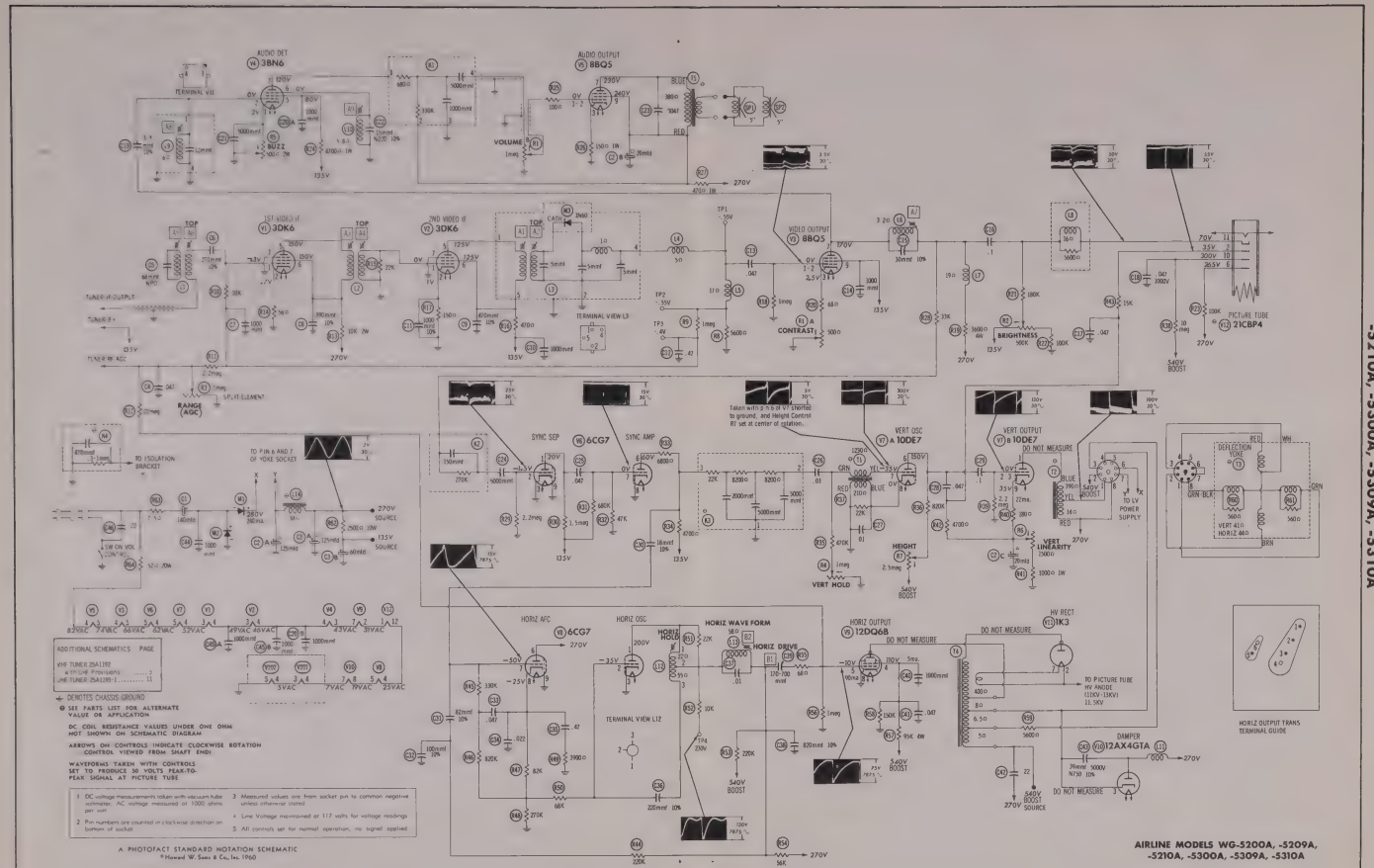
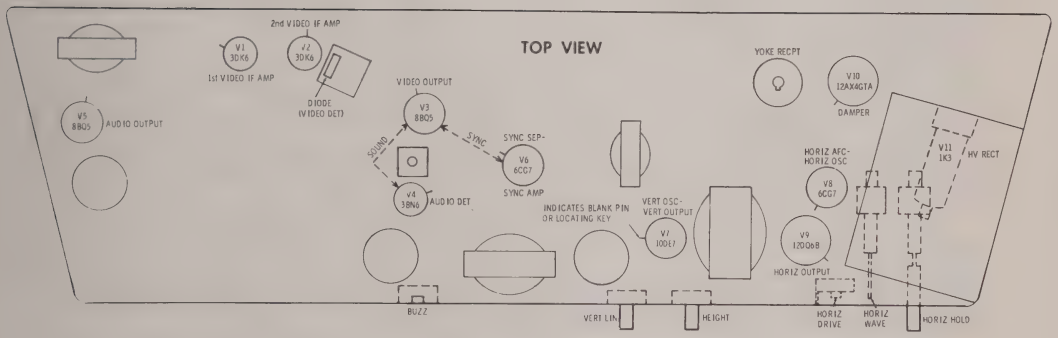
SET 505 FOLDER 2



AIRLINE MODELS WG-5200A, -5209A, -5210A, -5300A, -5309A, -5310A

FOLDER 2

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

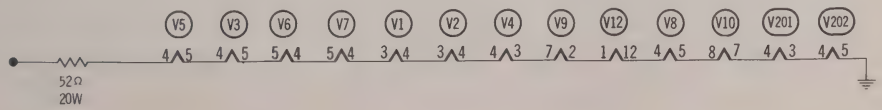
POWER SUPPLY FAILURE
No raster, no sound Fusible Resistor, Rect. (B+)

SWEEP FAILURE
No raster, has sound V8, V9, V10, V11, V12
No vertical deflection V7
Poor vert. linearity or foldover V7
Poor horiz. linearity or foldover V8, V9, V10
Narrow picture V8, V9, V10, Rect. (B+)
Vert. off freq. V7
Horiz. off freq. Diode (Horiz. AFC), V8

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, Diode (Video Det.), V3
No pic, no sound, has snow V201, V202
No pic, has sound, has raster V3, V12
Has pic, no sound V4, V5

SYNC FAILURE
No vert. sync V6
No horiz. sync V8, V9
No vert. or horiz. sync V6

This receiver employs tubes used in a series filament network, an open filament in any tube will cause the set to be inoperative. (See circuit below.)



ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

USE AN ISOLATION TRANSFORMER TO PROTECT THE TEST EQUIPMENT.
The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: Al thru A9 ..... GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545
Mixer Plate Coil ..... GENERAL CEMENT #9296, 9297
WALSCO #2546, 2547

VIDEO IF ALIGNMENT

Connect the negative lead of a 7 volt bias supply to point TP3. Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	High side thru .01mfd to pin 1 (grid) of 2nd Video IF. Low side to chassis. Adjust output for 4 Volts peak to peak on scope.	44.0MC (10MC Swp.)	42.4MC 45.75MC	Any non-interfering channel	Vert. Amp. thru 47K to TP2. Low side to chassis. (Across Video Det. load.)	Al, A2	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown. Al controls marker positions and A2 controls gain and symmetry.
2.	High side thru .01mfd to pin 1 (grid) of 1st Video IF. Low side to chassis. Adjust output to 4 Volts peak to peak on scope.	"	42.4MC 43.5MC 44.5MC 55.75MC	"	"	A3, A4	Adjust for maximum gain and symmetry of response similar to Fig. 2 with markers as shown. A3 controls marker positions and A4 controls gain and symmetry.
3.	Place a thin insulated metal strip between the Mixer-Osc. tube and tube shield. Connect the high side of sweep generator to the metal strip. Low side to chassis.	"	41.25MC 42.4MC 43.5MC 44.5MC 45.75MC	"	"	A5, A6 & Mixer Plate Coil	Adjust for maximum gain and symmetry of response similar to Fig. 3 with markers as shown. Adjust A5 to place 41.25MC marker in trap notch.

4.5MC TRAP ALIGNMENT

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
4.	High side thru .01mfd to TP1. Low side to chassis.	4.5MC (Unmod.)	Any non-interfering channel	AC probe to pin 11 (cathode) of picture tube. Common to chassis. Use 0-10VAC scale.	A7	Adjust for MINIMUM deflection.

SOUND IF ALIGNMENT

Tune in a TV station and reduce the signal strength at the antenna terminals until a hiss is heard in the sound similar to super-regeneration.
Adjust A8, A9 and the Buzz Control for maximum undistorted sound with MINIMUM buzz.
If the hiss disappears during adjustment, further reduce the signal strength.

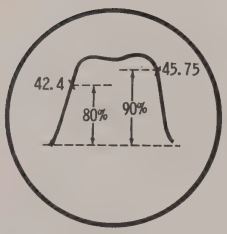


FIG.1

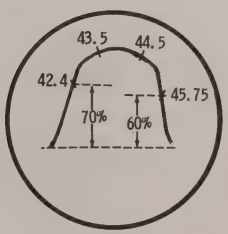


FIG.2

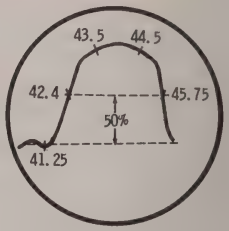
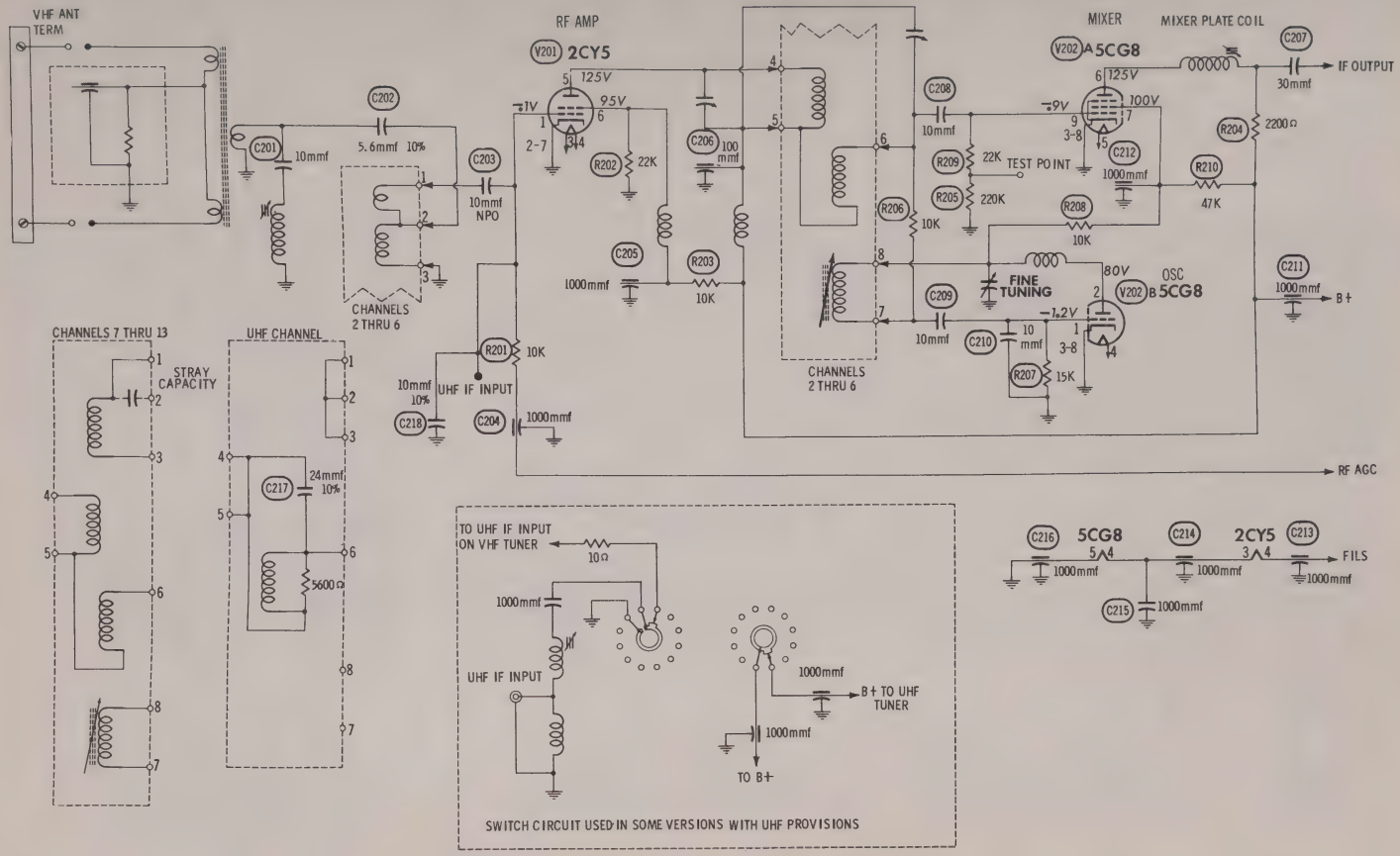


FIG.3



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VHF TUNER with UHF Provisions - 25A1192

AIRLINE MODELS WG-5200A, -5209A, -5210A, -5300A, -5309A, -5310A

TUNER PARTS LIST AND DESCRIPTIONS

25A1192

TUBES

• GENERAL ELECTRIC • RAYTHEON • SYLVANIA •					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V201	RF Amp	2CY5	V202	Mixer - Osc.	5CG8

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C201	10		NPO-DI 10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C202	5.6 10%							10TCC-V5.6
C203	10 NPO		NPO-DI 10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C204	1000		EF-001	MFT-1000		CCF-102	CT280A	
C205	1000		EF-001	MFT-1000		CCF-102	CT280A	
C206	100		EF-0001	MFT-100				
C207	30							
C208	10		NPO-DI 10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C209	10		NPO-DI 10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C210	10		NPO-DI 10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C211	1000		EF-001	MFT-1000		CCF-102	CT280A	
C212	1000		EF-001	MFT-1000		CCF-102	CT280A	
C213	1000		EF-001	MFT-1000		CCF-102	CT280A	
C214	1000		EF-001	MFT-1000		CCF-102	CT280A	
C215	1000		DI-1000	DD-102	BYA10D1	CCD-102	GP210	10TS-D10
C216	1000		EF-001	MFT-1000		CCF-102	CT280A	
C217	24 10%		NPO-SI 24	TCZ-24	C10Q24C	CCTO-240	CNO-427	10TCC-Q25
C218	10 10%		NPO-SI 10	TCZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R201	10K	
R202	22K	
R203	10K	
R204	2200Ω	

ITEM No.	RATING	REMARKS
R205	220K	
R206	10K	
R207	15K	
R208	10K	

ITEM No.	RATING	REMARKS
R209	22K	
R210	47K	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	PART No.	REPLACEMENT DATA
K201	VHF Antenna Filter			

TUNER ALIGNMENT INSTRUCTIONS

TUNER ALIGNMENT

Suggested Alignment Tools: GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989
WALSCO #2515, 2531, 2532

VHF OSCILLATOR ALIGNMENT

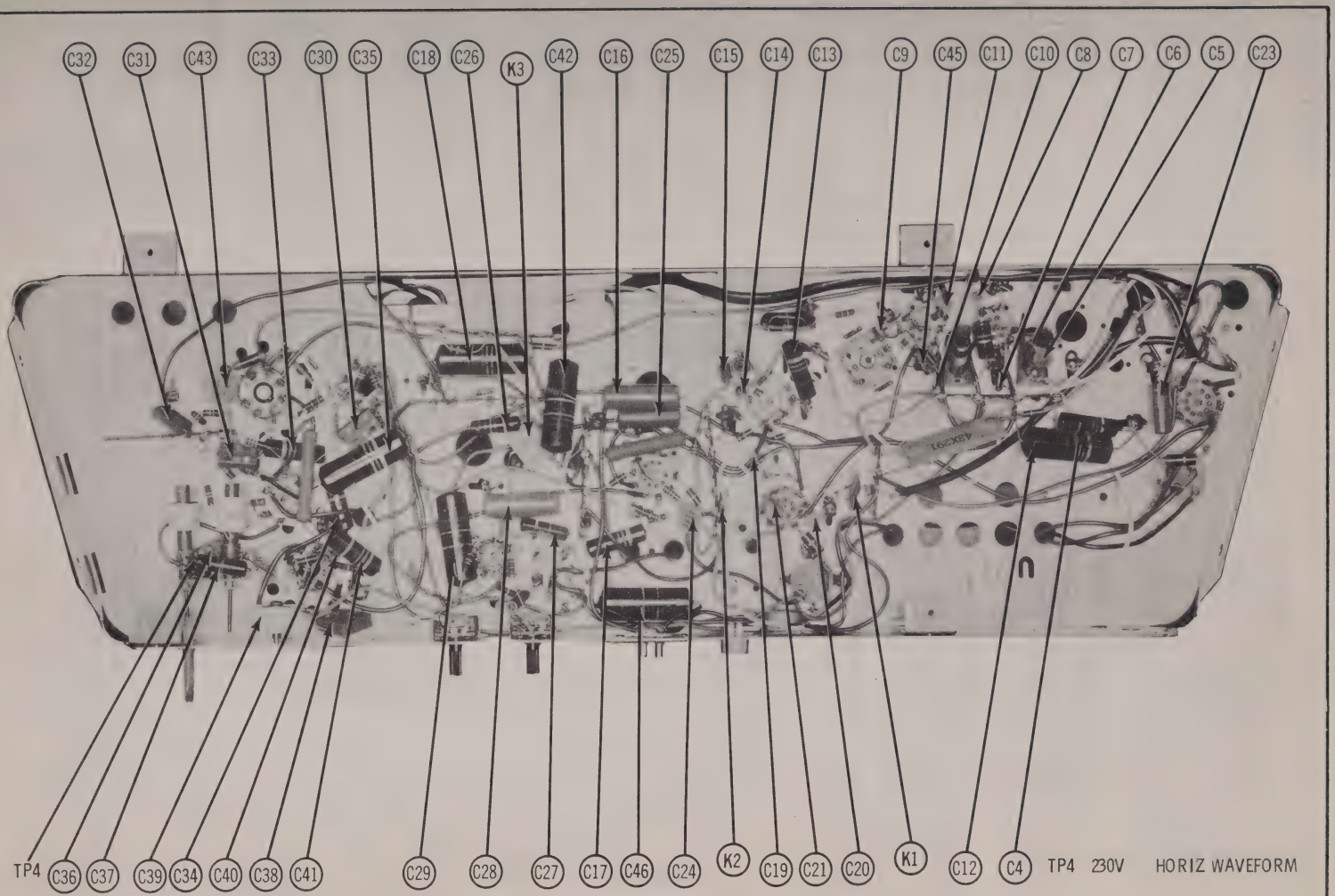
The individual channel adjustment screws are accessible one at a time, thru a hole in the front of the tuner, as the Channel Selector is rotated. Set the Fine Tuning to the center of its range and switch to channel to be adjusted and adjust for best picture and sound.

VHF RF AND MIXER ALIGNMENT

This portion of the tuner has been properly aligned at the factory and is very stable. Alignment of this portion should not be attempted in the field.

UHF TUNER ALIGNMENT

This portion of the tuner has been properly aligned at the factory and is very stable. Alignment of this portion should not be attempted in the field.



CHASSIS BOTTOM VIEW - CAPACITOR AND MISC. IDENT.

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	GENERAL ELECTRIC • RAYTHON • SYLVANIA		ITEM No.		
	USE	TYPE		USE	TYPE
V1	1st Video IF Amp.	3DX8	V7	Vert. Osc. - Vert. Output	12DR7
V2	2nd Video IF Amp.	3DX8	V8	Horiz. AFC - Horiz. Osc.	6CG7
V3	Video Output	6BQ8	V9	Horiz. Output	12DQ8B
V4	Audio Det.	2BN6	V10	Damper	12AX4GTA
V5	Audio Output	6BQ5	V11	HV Rect.	1B3
V6	Sync Sep. - Sync Amp.	6CG7			

PICTURE TUBE

ITEM No.	REPLACEMENT DATA					NOTES
	AIRLINE PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	RAYTHON PART No.	SYLVANIA PART No.	
V12	21CBP4	21CBP4A	21CBP4-A	21CBP4A/21CBP4A	21CBP4/21CBP4A	1 Aluminized 2 Silver Screen "85" 3 Alternate
	21CBP4-2	21CBP4A	21CBP4-A	21CBP4A/21CBP4A	21CBP4/21CBP4A	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA					NOTES
	CAP	VOLT	AIRLINE PART No.	ARROWOOD PART No.	CORNELL DUBILIER PART No.	MALLORY PART No.	TYRAMID PART No.	SPRAGUE PART No.
C1	140	150	45X42	AF82-20	XA82B5	FT1T	T1E-34	TVL-1438
C3A	125	300	45X43	AF84-07-80	XC07D3	TP45A	T1E-36	TVL2-3374.3*
B	80	300				TP45A	T1E-36	
C	40	30				TP45A	T1E-36	
C3A	135	300	46X48T	AF82-96-83	D8048	TP30D.3T	T1E-36	TVL-3574.6
B	60	300						

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REMARKS	REPLACEMENT DATA						
				ARROWOOD PART No.	CENTRALAB PART No.	CORNELL DUBILIER PART No.	FAMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1	.047	300V		P2B8N-047	DD-503	CUB2B47	4DP-3-473	GM-6147	2TM-S47	
C2	68	NPO		NPO-D-68	DTZ-68	CUB2B6C	CCTO-680	CM-1068	3TC-Q68	
C3	270		10%	DE-270	DD-271	L10T27	CCO-271	GP327	10TS-T27	
C4	1000		10%	BPD-103	DD-103	BYA102E	CCO-102	P-303	51E-D30	
C5	330		10%	DE-330	DD-331	L10T33	CCO-331	GP333	10TS-T33	
C6	470		10%	DE-470	DD-471	L10T47	CCO-471	GP347	10TS-T47	
C10	1000			BPD-301	DD-102	BYA102E	CCO-102	B-310	51E-D30	
C11	1000		10%	DE-1000	DD-102	JB10A	CCO-102	GP310	10TS-D10	
C12	.47	200V		P2B8N-47	DD-503	CUB2B47	4DP-5-474	GM-5047	2TM-P47	
C13	.047	200V		P2B8N-047	DD-503	CUB2B47	4DP-3-473	GM-6147	2TM-S47	
C14	1000			BPD-098	DD-103	BYA102E	CCO-102	B-310	51E-D30	
C15	30		10%	DJ-30	DD-300	L20J30	CCO-300	GP430	10TS-Q30	
C16	.1	400V		P2B8H-1	DD-104	CUB4P1	4DP-3-105	GM-6101	4TM-P1	
C17	.047	300V		P2B8N-047	DD-503	CUB2B47	4DP-3-473	GM-6147	2TM-S47	
C18	.047	1000V		P1B8D-047		CUB1D47	4DP-3-473	GM-6147	1TM-S47	
C19	3.3	3%		HPO-SI 3.3	TCZ-3R3	C10Y3C	CCTO-3R3	CMO-533	10TCC-Y33	
C20A	1000			BPD-XX08	DD8-103	BYD8D1E	CCO-103 CCO-102	B-8D-310	51E-ED30	
B	1000						CCO-102			
C21	5000			BPD-006	DD-503	BYA102E	CCO-502 *	B-350	51E-D50 10TCH-Q25	
C22	15	M330	10%	P2E8YC-0047	DK-472	CUB6D47	4DP-1-472	GM-6247	5TM-D47	
C23	5000	600V		BPD-005	DD-502	BYA102E	CCO-502	B-250	51E-D50	
C24	.047	400V		P4B8N-047	DD-503	CUB4S47	4DP-3-473	GM-6147	4TM-S47	
C25	.01	600V		P6B8N-01	DB-103	CUB6E	4DP-1-103	GM-6101	6TM-E	
C27	.01	600V		P6B8N-01	DB-103	CUB6E	4DP-1-103	GM-6101	6TM-E	
C28	.047	600V		P6B8N-047	DD-503	CUB6S47	6DP-3-473	GM-6147	6TM-S47	
C29	5000	500V		P6B8N-1	DD-502	CUB6D	6DP-4-104	GM-6247	6TM-P1	
C30	10		10%	1689-000018	TCZ-1R	22S1Q1	CM-1H0-1R0J	CMO-108	MS-4J8	
C31	33		10%	1689-000033	TCZ-33	22S1Q33	CM-1H0-330J	CMO-108	MS-4S3	
C32	100		10%	1689-0001	TCZ-100	22S1Q1	CM-1H0-101K	MCB2E	MS-2J0	
C33	.047	300V		P4B8N-047	DD-503	CUB3S47	4DP-3-473	GM-6147	3TM-S47	
C34	.047	300V		P2B8N-032	DD-303	CUB4S32	4DP-3-323	GM-6132	4TM-S23	
C35	.47	200V		P2B8N-47		CUB2P47	4DP-3-474	GM-6247	2TM-P47	
C36	.1		10%	1689-00032	TCZ-220	22T1T22	CM-1H0-220J	CMO-532	MS-3J2	
C37	.01	400V		P4B8N-01	DB-103	CUB4E	4DP-1-103	GM-6101	4TM-E	
C38	150	10%		1689-00082		15T3T2	CM-1H0-151K	MCB2E1	MS-3S2	
C39	170-700		PC #17A276				459			
C40	1000			BPD-001	DD-102	BYA102E	CCO-102	B-310	51E-D30	
C41	.047	400V		P4B8N-047	DD-503	CUB4S47	4DP-3-473	GM-6147	4TM-S47	
C42	.33	400V		P4B8N-33		CUB4P33	4DP-5-334	GM-6233	4TM-P33	
C43	39 5000V	M750	10%							
C44	1000			BPD-001	DD-102	BYA102E	CCO-102 *	B-310	51E-D30	
C45A	1000			BPD-XX08	DD8-102	BYD8D1E	CCO-102 *	B8E310	51E-ED30	
B	1000						CCO-102			
C46	.22	600V		P6B8N-22		CUB6P33	6DP-5-334	GM-6033	6TM-P22	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	AIRLINE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS—IRC PART No.	MALLORY PART No.	
R1A	500C			72X36	X1-1		RTY-705	Contrast
B	Long				R2-51			Volume
C	Switch				SW-1			Power Off-On
R2A	500K		6QX483		B-59	A4T-500K-S	QU-133	Brightness
B	Shaft				Not Req.	FS-3	Not Req.	
R3	Long *		6QX485					Range (AGC)
R4A	Long		6QX435		B-89	A4T-long-S	QU-137	Vert. Hold
B	Shaft				Not Req.	FS-3	Not Req.	

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R6	5600Ω	
R9	1meg	
R10	10K	
R11	2.2meg	
R12	680K	
R13	10K 2W	
R14	5MΩ	
R15	22K	
R16	470Ω	
R17	150Ω	
R18	1meg	
R19	3600Ω 4W	Pt. #43X331
R20	68Ω	ECP PW5-3600Ω
R21	1800Ω	
R22	1800Ω	
R23	100K	
R24	470KΩ 1W	
R25	100Ω	
R26	150Ω 1W	

ITEM No.	RATING	REMARKS
R27	470Ω 1W	
R28	33K	
R29	3.3meg	
R30	1.5meg	
R31	680K	
R32	47K	
R33	680Ω	
R34	4700Ω	
R35	470K	
R36	820K	
R37	22K	
R38	10meg	
R39	2.2meg	
R40	100Ω	
R41	10000Ω 1W	
R43	4700Ω	
R44	22K	
R45	220K	
R46	330K	

ITEM No.	RATING	REMARKS
R46	330K	
R47	82K	
R48	270K	
R49	3900Ω	
R50	68K	
R51	33K	
R52	150K	
R53	330K	
R54	56K	
R55	68Ω	
R56	1meg	
R57	95K 4W	Pt. #43X351
R58	150K	
R59	56000Ω	
R60	560Ω	
R61	560Ω	
R62	2500Ω 10W	Pt. #43X291
R63	7.5Ω ①	BRC #PW10-2500Ω Pt. #43X397 BRC #PW7.5Ω
R64	33Ω 30W	Pt. #43X303

① Pushbe Type

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		AIRLINE PART No.	Merit PART No.	Miller PART No.	Rem PART No.	Stancor PART No.	
L4A	1st Video IF	8A43M		813L		RTC-8552	
B	41.25MC Trap						
L2	2nd Video IF	8A2444				RTC-8551	
L3A	3rd Video IF	8A2438 ①					
B	Series Peaking		TY-190	6178		RTC-8592	30uh
L4	Series Peaking	8A2375	TY-190	6178		RTC-8592	30uh
L5	Shunt Peaking-Coil	8A32	TY-185	6155		RTC-8587	280uh
L6	4.5MC Trap	8A2386	TY-151	1469	6F-3	RTC-8602	
L7	Shunt Peaking	8A27	TY-200	6132	VP T	RTC-8577	225uh
L8	Series Peaking	8A45 ②	TY-188 *	6150 *	VP-6 *	RTC-8578 *	270uh
L9	Sound IF	8A343A					
L10	Quadrature Coil	8A2387	TY-131	1480		RTC-8605	
L11	RF Choix	8A2380	BC-582	4604		RTC-8516	1 Suh

① Includes M3. ② Wound on 6800Ω Resistor. * Parallel with 5600Ω Resistor.

COILS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA							NOTES
		AIRLINE PART No.	Merit PART No.	Miller PART No.	Rem PART No.	Rogers PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L23	Horiz. Osc.	8A3465	TY-168	6311			PTC-8633	SB-7	
L13	Horiz. Waveform	8A2372	MWC-12	6315	H-102		WC-18	HS-5	

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA						NOTES
	CURRENT (Measured)	DC RES	INDUCTANCE @ CURRENT 1000 ^c/s	AIRLINE PART No.	Merit PART No.	Rem PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
L14	.240A	28Ω	8 Hy.	52X95-2A ①	C-2896 ②	F-801 ②	C-2343	26C44	C-28X	

① Alternate Part #53X95-1L. ② Drill new mounting holes.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA							NOTES
		AIRLINE PART No.	Merit PART No.	Rem PART No.	Rogers PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	Vert. Osc.	54X19A	A-3002	V405	VB010	A-8135	28A53	A-97X	
T2	Alt. Vert. Osc.	54X39							
	Vert. Output	51X207-1A	A-3855	V307 ①③	VO26 ③	VO-108	26B73 ①	A-142X ③	
T3	Alt. Vert. Output	51X207-1							
	Yoke Ratio .125MIG	54X365-B					Y-45 ③	Y-45 & LYW1 ③	
	90° Vert. (29MIG)								
	Alternate Yoke	54X458						YC-11X	
	Rear Cover and	2A435							
	Centering Device								
T4	Horiz. Output	53X389							

① Drill new mounting holes. ② Connect as Autotransformer. ③ Cut and tape red/black lead.
④ Remove jumper from terminal #3 to #6. Connect yoke terminal #1 to plug pin #4; terminals #2 & #7 to plug pin #2; terminal #3 to plug pin #2; terminal #5 to plug pin #1; terminal #4 to plug pin #6. Use original rear cover & centering device.
⑤ Connect yoke terminal #3 to plug pin #4; terminals #2 & #7 to plug pin #2; terminal #1 to plug pin #3; terminal #6 to plug pin #6.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	AIRLINE PART No.	Merit PART No.	Rem PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T5	6000Ω	2-4Ω	51X206A or 51X306	A-3028	AU-401	A-3877	24B51	S-6X

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP	AIRLINE PART No.	QUAM PART No.	
SP1	5"	PM	8-Ω	12A550-2	5A1SZ6.4	
SP2	8"	PM	8-Ω	12A550-2	5A1SZ6.4	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	AIRLINE PART No.	REPLACEMENT DATA
R1	Audio Coupling	1000mmf, 5000mmf, 6800, 330K	76X16	Centralab PC-408
R3	Sync Sep. Grid	150mmf, 220K	76X15	
R3	Vert. Integrator	2600mmf, 5000mmf, 6000mmf, 82000, 82000, 22K	76X7C ①	Aerovox PA-301 Centralab PC-104 Mallory MS-100 Sprague Y-6
X4	Isolation	470mmf, -3-1meg	*	Centralab PC-471 Sprague AC1-1

① Alternate Part #76X7. * Some versions may use individual components in this application.

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					NOTES
	CURRENT (Measured)	AIRLINE PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	
M1	240A	66X22	1N1763	40K	SR500	SR500	Silicon Type
M2	240A	66X23	1N1763	40K	SR500	SR500	Silicon Type

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		AIRLINE PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M3	1N60		1N60	1N60	Video Det. (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	AIRLINE PART No.	NOTES
M4	Tuner- Tuner Magnet	23A1182 23A1193-1 2A476	VHF UHF Beam Alignment (May not be used to some models)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

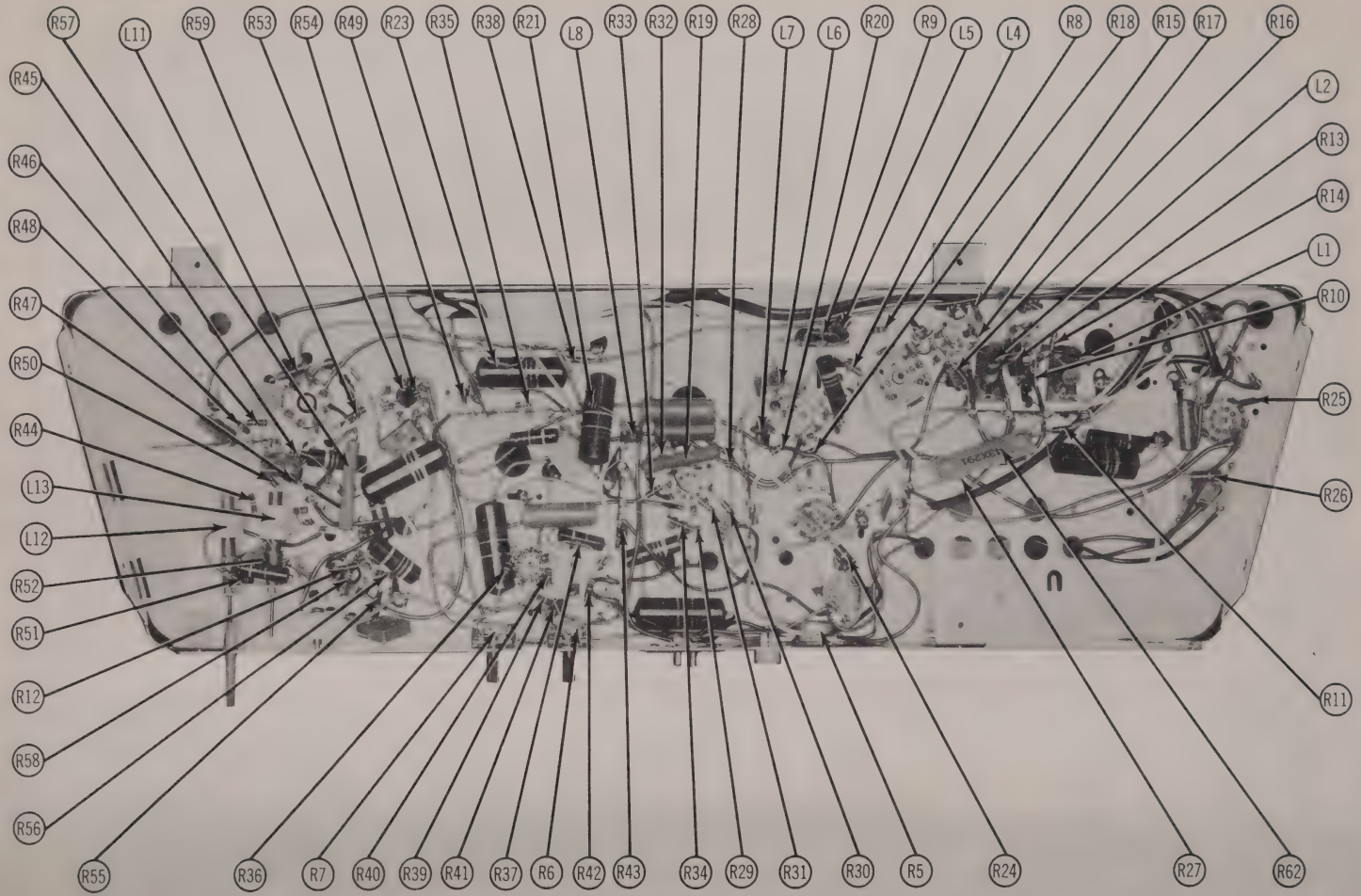
NAME	PART NO	DESCRIPTION
Safety Glass	17X203-1	Tinted
Mask	45X428-2	
Knob	10A868	UHF Tuning
Knob	10A869-1	UHF Indicator
Knob	10A979-1	Channel Selector
Knob	10A857-1	Fine Tuning
Knob	10A963-1	Off-On, Volume
Knob	10A979-1	Brightness, Vertical, Range
Knob	10A869-1	Contrast

WIRING DATA

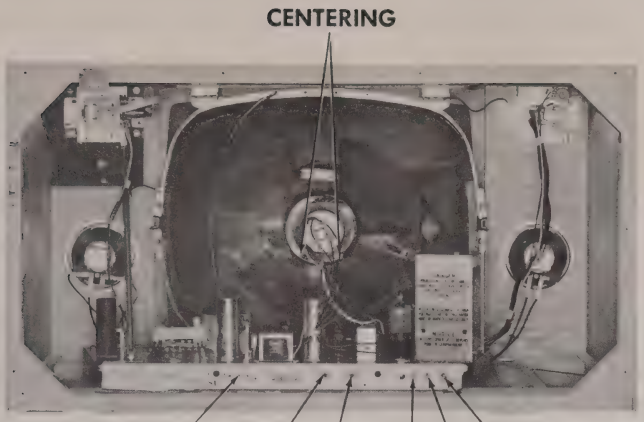
High Voltage Lead	Use BELDEN No. 8889
Shielded Hook-up Wire	Use BELDEN No. 8085 (Single Conductor) 8703 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8674
300Ω Tuner Input Lead	Use BELDEN No. 8231
300Ω Antenna Lead-in	Use BELDEN No. 8230 or 8275
Antenna Rotor Cable	Use BELDEN No. 8464 (Flat) or 8484 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8486 (Round) - 8 Conductor

AIRLINE MODELS WCL-5200A, -5209A, -5210A, -5300A, -5303A, -5310A

FOLDER 2



CHASSIS BOTTOM VIEW - RESISTOR AND INDUCTOR IDENT.



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Tune in a station and adjust the Horizontal Hold until the picture is just about to tear out of sync as can be seen at the top of the picture.

Turn the Contrast control fully counterclockwise and the Brightness control clockwise so that the picture appears washed out. Turn the Horizontal Drive Trimmer (B1) clockwise until white vertical bars (drive lines) appear in the left center portion of the raster, then counterclockwise until the white bars just disappear.

Connect the vertical amplifier of the scope to TP-4. Low side to chassis. Adjust the Horizontal Waveform slug (B2) until the round and sharp peaks of the waveform are equal in amplitude. (See Fig. 4.) Keep the picture in sync during this adjustment.

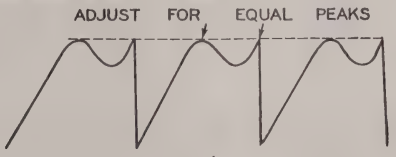
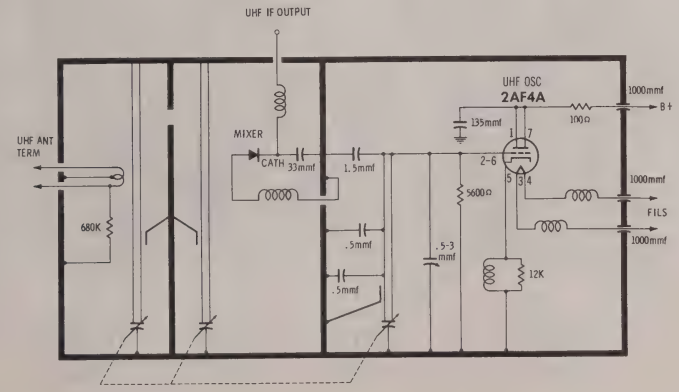


FIG. 4



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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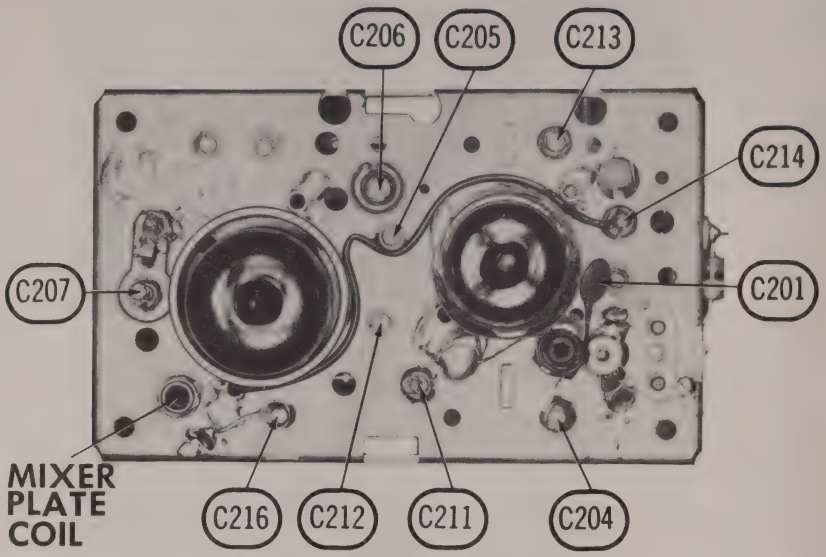
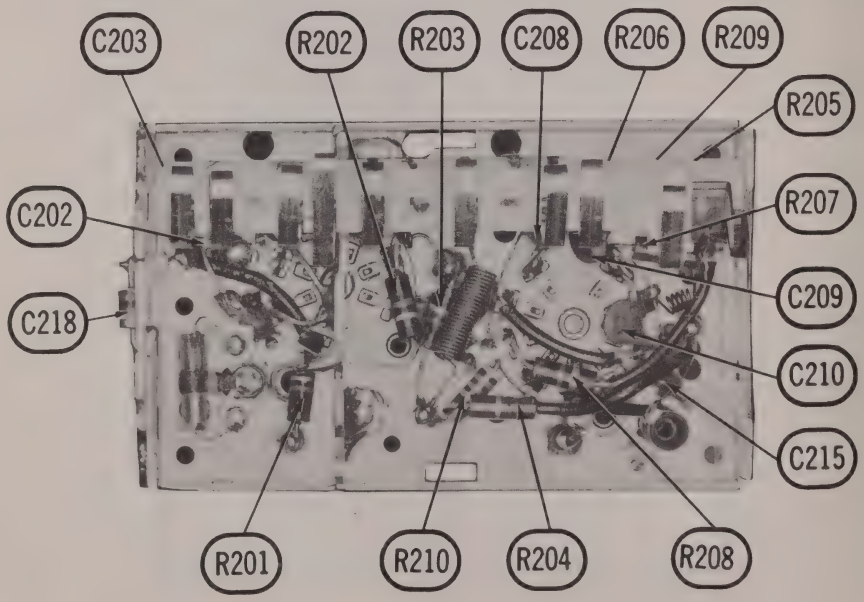
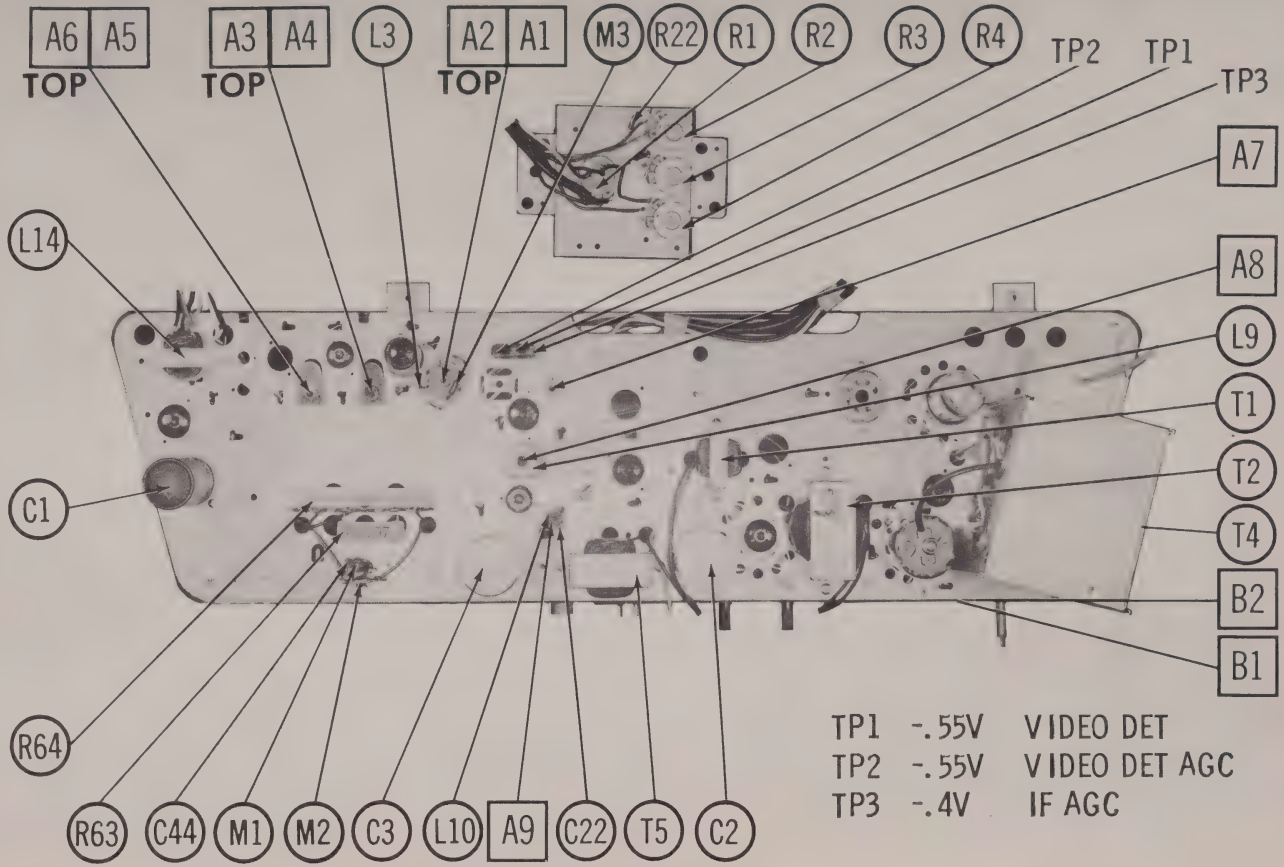
UHF TUNER 25A1193-1



VHF TUNER with UHF Provisions 25A1192 - TOP VIEW



VHF TUNER with UHF Provisions 25A1192 - BOTTOM VIEW

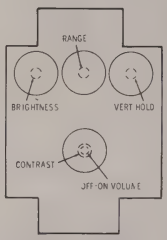


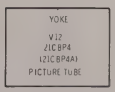
CHASSIS - TOP VIEW

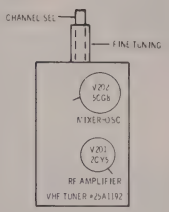
RESISTANCE MEASUREMENTS

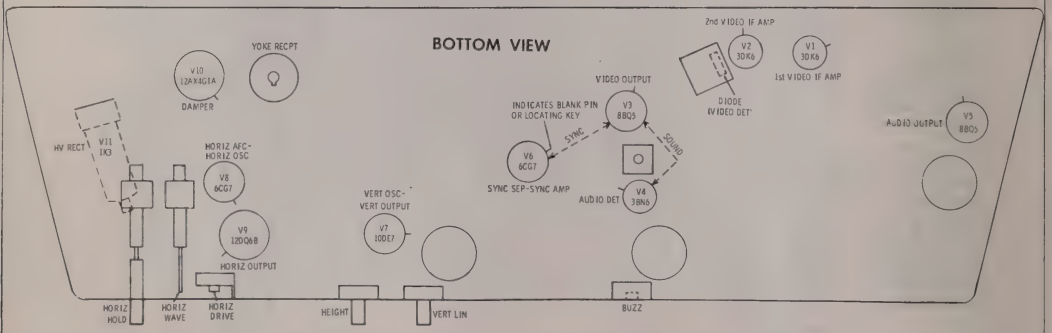
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	3DK6	800K	56Ω	13Ω	12Ω	†10K	†10K	0Ω		
V2	3DK6	2Ω	150Ω	12Ω	11Ω	†3000Ω	†3000Ω	0Ω		
V3	8BQ5	1meg	1meg	● 100Ω	18Ω	16Ω	NC	†3600Ω	NC	†2500Ω
V4	3BN6	● 250Ω	6Ω	10Ω	11Ω	†7200Ω	5.8Ω	†330K		
V5	8BQ5	100Ω	100Ω	150Ω	20Ω	18Ω	NC	890Ω	NC	†470Ω
V6	6CG7	†1.5meg	2.2meg	0Ω	15Ω	16Ω	†14K	47K	0Ω	0Ω
V7	10DE7	†440Ω	2.2meg	2.2meg	13Ω	15Ω	●†2.2meg	● 950K	210Ω	● 2000Ω
V8	6CG7	†56K	335K	0Ω	6Ω	5Ω	†38Ω	680K	350K	0Ω
V9	12DQ6B	TP	8Ω	TP	†95K	1meg	NC	10Ω	0Ω	TOP CAP †8Ω
V10	12AX4GTA	TP	NC	¶150K	NC	†38Ω	TP	3Ω	5Ω	
V11	1K3	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP †410Ω
V12	21CBP4	8Ω	● 20K	Pin 6 †100K	Pin 10 †10meg	Pin 11 ● 290K	Pin 12 6Ω			
V201	2CY5	● 12K	0Ω	2Ω	3Ω	†2500Ω	22K	0Ω		
V202	5CG8	15K	†60K	0Ω	2Ω	0Ω	†5000Ω	†50K	0Ω	240K
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 3 OF V10.
† MEASURED FROM OUTPUT OF M1.
● THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
NC NO CONNECTION TP TIE POINT









TUBE PLACEMENT CHART

PHOTOFACT® Folder

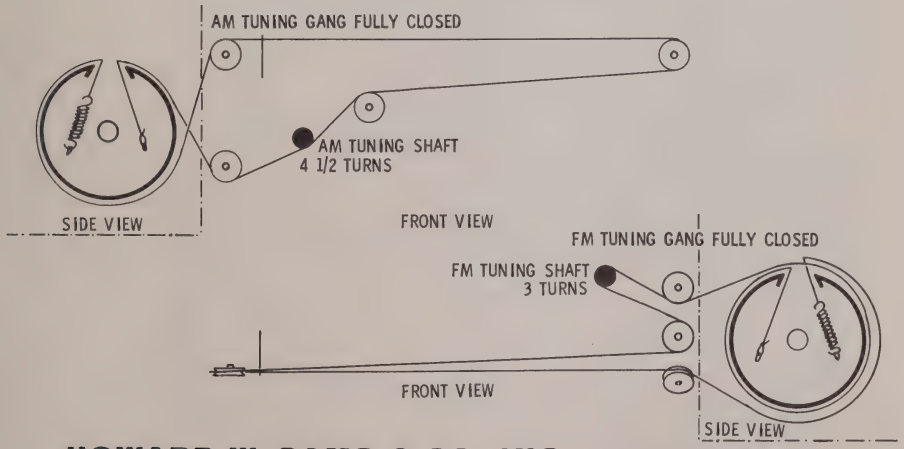
**BELL SOUND
MODEL 6070**

BELL SOUND
MODEL 6070

BELL SOUND
MODEL 6070

TRADE NAME	Bell Sound Model 6070 (Carillon)		
MANUFACTURER	Bell Sound, Div. of Thompson Ramo Wooldridge Inc., 555 Marion Road, Columbus 7, Ohio		
TYPE SET	AC Operated 12 Tube FM-AM Tuner		
POWER SUPPLY	110-120 Volts AC, 60 Cycles	RATING	55 Watts, .56 Amp. @117 Volts AC
TUNING RANGE—BROADCAST	535 — 1640KC	FREQ. MOD.	88 — 108MC

DIAL CORD STRINGING



HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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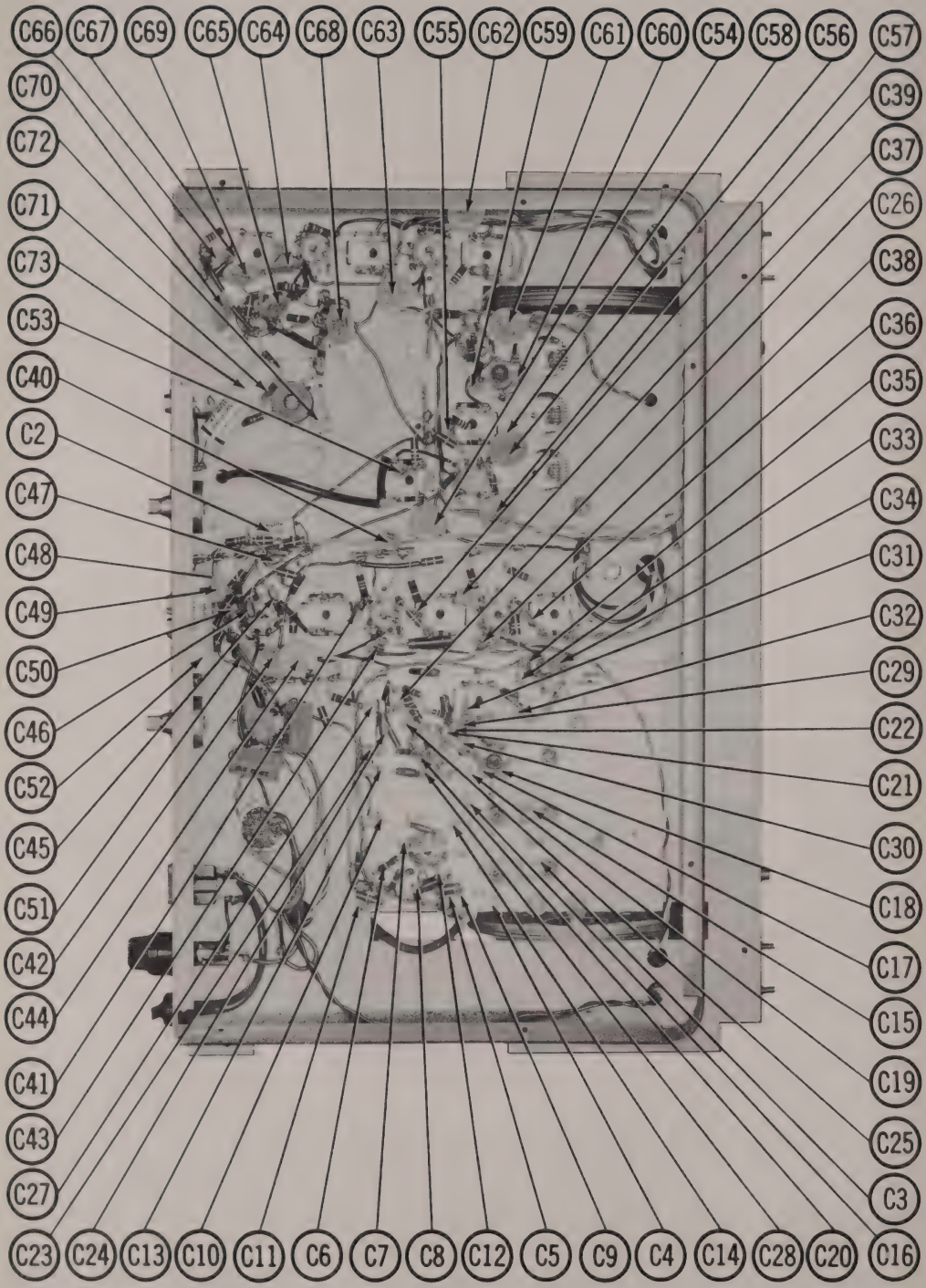
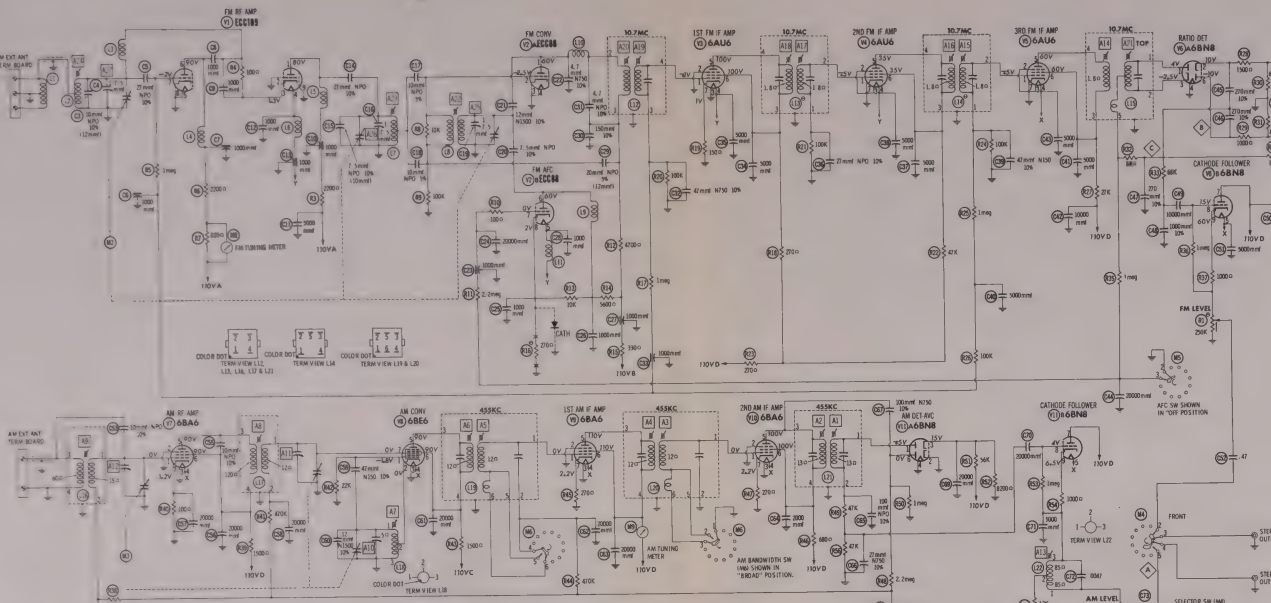
KL028

SET 505 FOLDER 3



CHASSIS BOTTOM VIEW - CAPACITOR IDENT.



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	ECC189 MCG	▪ 270Ω	0Ω	100Ω	1Ω	0Ω	▪ 1500Ω	1.5meg	0Ω	0Ω
V2	ECC88 6DJ8	▪ 1500Ω	100K	0Ω	0Ω	1Ω	▪ 6400Ω	2.5meg ▲ INF	270Ω	0Ω
V3	6AU6	100K	0Ω	0Ω	1Ω	▪ 1100Ω	▪ 1100Ω	150Ω		
V4	6AU6	100K	0Ω	0Ω	1Ω	▪ 47K	▪ 47K	0Ω		
V5	6AU6	100K	0Ω	0Ω	1Ω	▪ 27K	▪ 27K	0Ω		
V6	6BN8	1meg	▪ 500Ω	1meg	0Ω	1Ω	7800Ω	▪ 500Ω	1meg	250K
V7	6BA6	3.7meg	0Ω	0Ω	1Ω	▪ 2100Ω	▪ 2000Ω	100Ω		
V8	6BE6	22K	4Ω	0Ω	1Ω	▪ 2000Ω	▪ 2000Ω	3.7meg		
V9	6BA6	3.7meg	0Ω	0Ω	1Ω	▪ 500Ω	▪ 500Ω	270Ω		
V10	6BA6	15Ω	0Ω	0Ω	1Ω	▪ 1200Ω	▪ 1200Ω	270Ω		
V11	6BN8	96K	0Ω	820Ω	0Ω	1Ω	1meg	▪ 500Ω	1meg	6000Ω
V12	E280 6W	59Ω	NC	¶	0Ω	1Ω	NC	95Ω	NC	NC

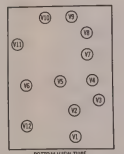
▪ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
¶ MEASURED FROM PIN 3 OF V12.
ALL MEASUREMENTS MADE IN "STEREO FM" POSITION WITH AFC OFF.
■ MEASURED IN "FM-AFC" POSITION.

NC NO CONNECTION

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

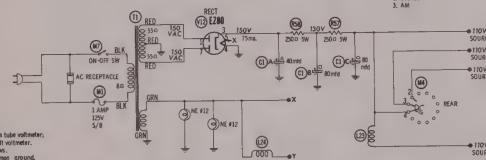
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION CONTROL VIEWED FROM SHAFT END.



BOTTOM VIEW TUBE LAYOUT

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±5% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

BELL SOUND MODEL 6070

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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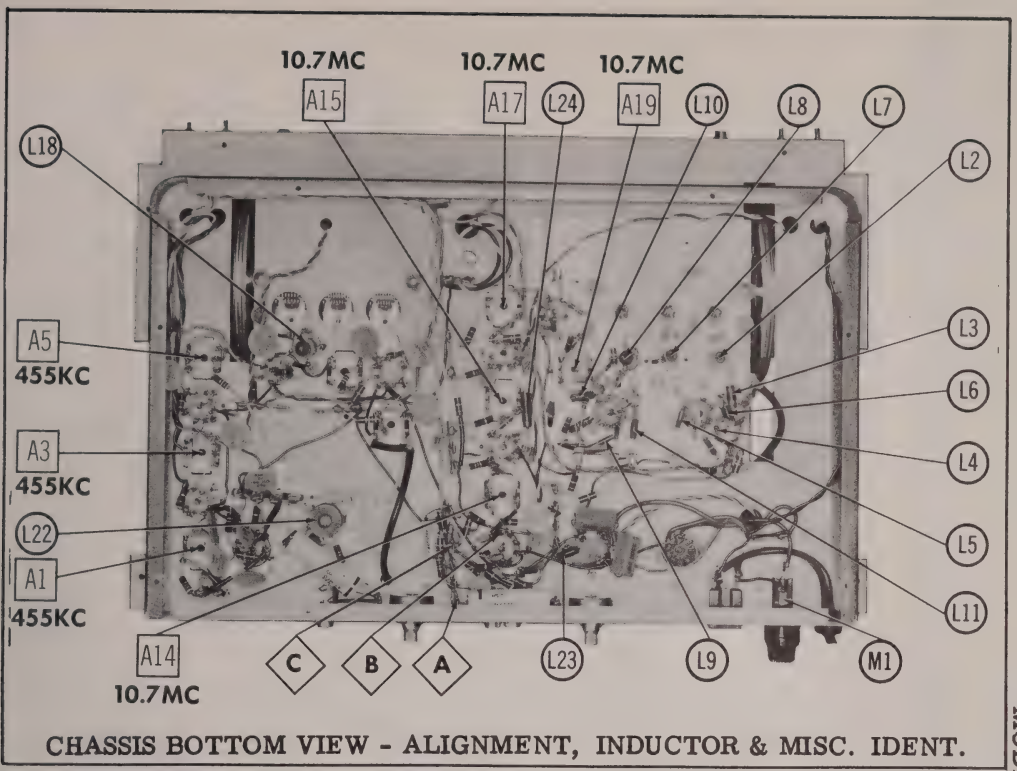
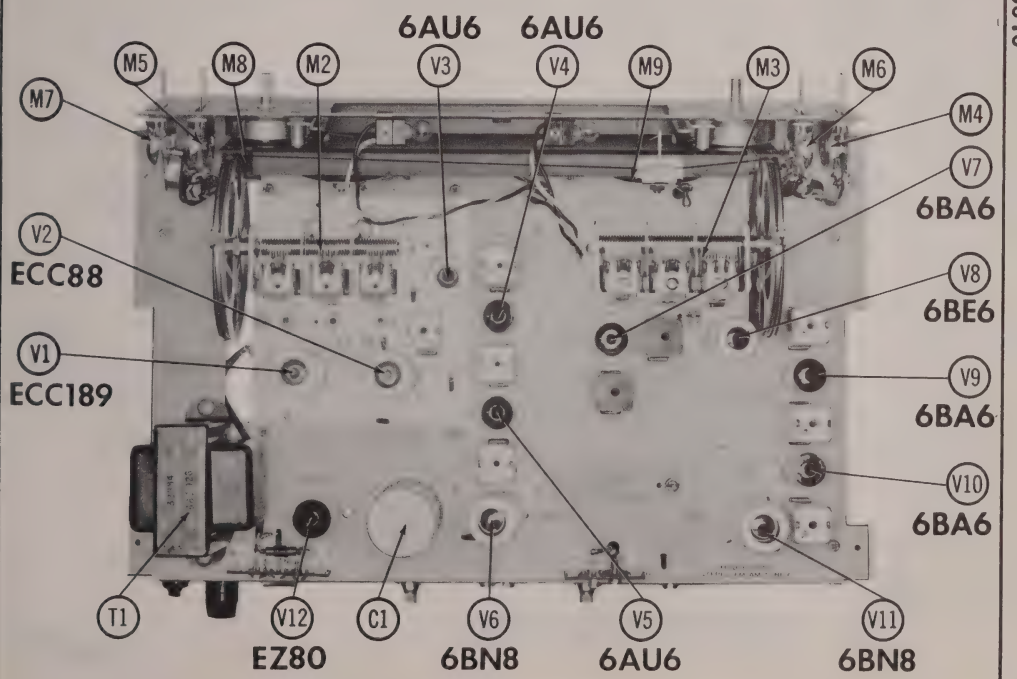


CHASSIS BOTTOM VIEW - ALIGNMENT, INDUCTOR & MISC. IDENT.



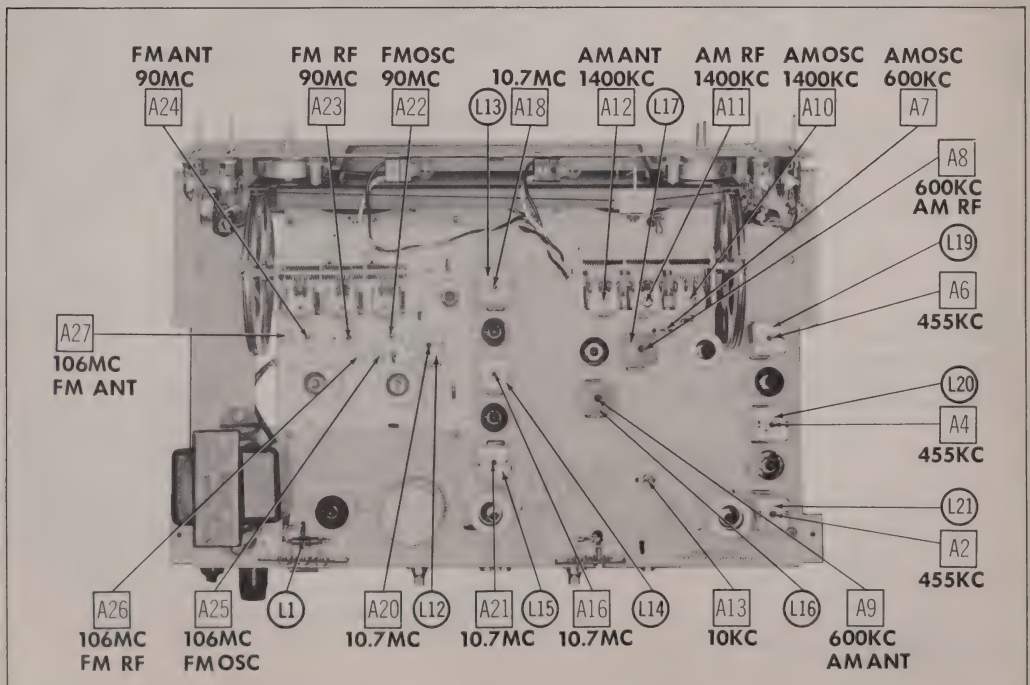
CHASSIS TOP VIEW - TUBE & MISC. IDENT.

AM ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT		
Use only enough generator output to provide a usable indication.		
Suggested Alignment Tools:	A1 thru A6, A8, A9 and A14 thru A24...	GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440 WALSCO #2526, 2543, 2544, 2545
	A7, A13.....	GENERAL CEMENT #8721, 8722 WALSCO #2519
	A10, A11, A12, A25, A26, A27.....	GENERAL CEMENT #5004, 5008, 5009 WALSCO #2520

AM ALIGNMENT—SELECTOR IN AM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	High side thru .01mfd to pin 7 (grid) of AM Converter. Low side to chassis.	455KC (400∿ Mod.)	(AM) Tuning gang fully open.	AC probe to point (A). Common to chassis.	A1, A2, A3, A4, A5, A6	Adjust for maximum deflection.
2.	"	455KC (50∿ 20KC Swp.)	"	USE SCOPE. Vert. Amp. to point (A). Low side to chassis.		AMS set to BROAD. If necessary, retouch A3, A4, A5 and A6 for symmetrical double peaked response curve.
3.	High side thru 200mmf to AM antenna terminal. Low side to chassis.	600KC (400∿ AM Mod.)	600KC	AC probe to point (A). Common to chassis.	A7, A8, A9	AMS set to SHARP. Adjust for maximum deflection.
4.	"	1400KC (400∿ AM Mod.)	1400KC	"	A10, A11, A12	AMS set to SHARP. Adjust for maximum deflection. Repeat Steps 3 and 4.
5.	"	600KC (50∿ 20KC Swp.)	600KC	USE SCOPE. Vert. Amp. to point (A). Low side to chassis.		AMS set to BROAD. If necessary, retouch A8 and A9 for symmetrical passband.
6.	"	1400KC (50∿ 20KC Swp.)	1400KC	"		AMS set to BROAD. If necessary, retouch A11 and A12 for symmetrical passband.
7.	"	1400KC 10KC AM Mod.)	"	AC probe to point (A). Common to chassis.	A13	AMS set to BROAD. Adjust for MINIMUM deflection.



CHASSIS—TOP VIEW

FM ALIGNMENT INSTRUCTIONS

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM—SELECTOR IN FM POSITION

AFC Off.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
8.	High side thru .01mfd to pin 1 (grid) of 3rd FM IF. Low side to chassis.	10.7MC (Unmod.)	(FM) Point of non-interference.	DC probe to point Ⓑ. Common to chassis.	A14	Adjust for maximum deflection.
9.	High side thru .01mfd to pin 1 (grid) of 2nd FM IF. Low side to chassis.	"	"	"	A15, A16	"
10.	High side thru .01mfd to pin 1 (grid) of 1st FM IF. Low side to chassis.	"	"	"	A17, A18	"
11.	High side thru .01mfd to pin 7 (grid) of FM RF Amp. Low side to chassis.	"	"	"	A19, A20	"
12.	High side thru .01mfd to pin 1 (grid) of 3rd FM IF Amp. Low side to chassis.	"	"	DC probe to point Ⓒ. Common to chassis.	A21	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE—SELECTOR IN FM POSITION

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.
AFC Off.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
8.	High side thru .01mfd to pin 1 (grid) of 3rd FM IF. Low side to chassis.	10.7MC (450KC Swp)	(FM) Point of non-interference.	Vert. Amp. to point Ⓑ. Low side to chassis.	A14	Disconnect stabilizing Capacitor C2. Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown.
9.	High side thru .01mfd to pin 1 (grid) of 2nd FM IF. Low side to chassis.	"	"	"	A15, A16	"
10.	High side thru .01mfd to pin 1 (grid) of 1st FM IF. Low side to chassis.	"	"	"	A17, A18	"
11.	High side thru .01mfd to pin 7 (grid) of FM RF Amp. Low side to chassis.	"	"	"	A19, A20	"
12.	High side thru .01mfd to pin 1 (grid) of 3rd FM IF. Low side to chassis.	"	"	Vert. amp. to point Ⓒ. Low side to chassis.	A21	Reconnect C2. Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A14 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT—SELECTOR IN FM POSITION

AFC Off.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
13.	Across FM antenna terminals with 120Ω in each lead.	90MC (Unmod.)	(FM) 90MC	DC probe to point Ⓑ. Common to chassis.	A22, A23, A24	Adjust for maximum deflection.
14.	"	106MC	106MC	"	A25, A26, A27	"

FIG. 1

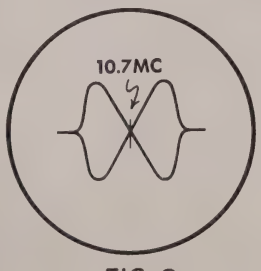


FIG. 2

CHASSIS BOTTOM VIEW - RESISTOR IDENT.

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	FM RF Amplifier	ECC189/6ES8	V7	AM RF Amplifier	6BA6
V2	FM Conv. -FM AFC	ECC88/6DJ8	V8	AM Converter	6BE6
V3	1st FM IF Amplifier	6AU6	V9	1st AM IF Amplifier	6BA6
V4	2nd FM IF Amplifier	6AU6	V10	2nd AM IF Amplifier	6BA6
V5	3rd FM IF Amplifier	6AU6	V11	AM Det. -AVC-Cath. Foll.	6BN8
V6	Ratio Det. -Cath. Follower	6BN8	V12	Rectifier	EZ80/6V4

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA Bell Sound PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲40	200	23B62	AFH3-21	XB0243	FP326.62	TMD-33	TVL-3525	
B	■80	200			BR8035	TC58	TD-40-350		
C	▲80	200							
C2	10	50		PTT50010	NLW10-50	TT50X10	ML10-50	TE-1304	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3	10 NPO 10%	(12) †	NPO-DI 10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C4	1-7.5	#25A17						
C5	27 NPO 10%		NPO-DI 25	TCZ-27	C10Q27C	CCTO-270	CNO-427	10TCC-Q27
C6	1000		EF-001	MFT-1000		CCF-102	CT280A	
C7	1000		EF-001	MFT-1000		CCF-102	CT280A	
C8	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C9	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C10	1000		EF-001	MFT-1000		CCF-102	CT280A	
C11	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C12	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C13	1000		EF-001	MFT-1000		CCF-102	CT280A	
C14	27 NPO 10%		NPO-DI 25	TCZ-27	C10Q27C	CCTO-270	CNO-427	10TCC-Q27
C15	7.5 NPO 10%	(10) †	NPO-DI 8.2		C10V8C			10TCC-V82
C16	1-7.5	#25A17						
C17	10 NPO 5%			DTZ-10	C10Q1C	CM-15-C-100J	CNO-410	10TCC-Q10
C18	10 NPO 5%			DTZ-10	C10Q1C	CM-15-C-100J	CNO-410	10TCC-Q10
C19	1-7.5	#25A17						
C20	7.5 NPO 10%		NPO-DI 8.2		C10V8C			10TCC-V82

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C21	12 N1500 10%			DTN-5	C10V5U	CCTN-050	CN7-547	10TCU-V50
C22	4.7 N750 10%					CCF-102	CT280A	
C23	1000		EF-001	MFT-1000		CCD-203	B-120	5HK-S20
C24	20000		BPD-02	DD-203	BYB6S2	CCD-102	B-210	5HK-D10
C25	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C26	1000		BPD-001	DD-102	BYA10D1	CCF-102	CT280A	
C27	1000		EF-001	MFT-1000		CCD-102	B-210	5HK-D10
C28	1000		BPD-001	DD-102	BYA10D1	DTZ-20	C10Q2C	CM-15-C-200J CNO-422 10TCC-Q20
C29	20 NPO 5%	(12) †		DTZ-20	C10Q2C	CM-15-C-200J	CNO-422	10TCC-Q20
C30	150 10%		DI-150	DD-151	L10T15	CCD-151	GP315	10TS-T15
C31	4.7 NPO 10%		NPO-DI 4.7	DTZ-4R7	C10V47C	CCTO-4R7	CNO-547	10TCC-V47
C32	47 N750 10%		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C33	1000		EF-001	MFT-1000		CCF-102	CT280A	
C34	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C35	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C36	27 NPO 10%		NPO-DI 25	TCZ-27	C10Q27C	CCTO-270	CNO-427	10TCC-Q27
C37	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C38	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C39	47 N150 10%						*	10TCP-Q47
C40	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C41	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C42	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C43	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C44	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C45	270 10%		DI-270	DD-271	L10T27	CCD-271	GP327	10TS-T27
C46	270 10%		DI-270	DD-271	L10T27	CCD-271	GP327	10TS-T27
C47	270 10%		DI-270	DD-271	L10T27	CCD-271	GP327	10TS-T27
C48	1000 10%		DI-1000	DD-102	PM6D1	CCD-102	GP210	10TS-D10
C49	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C50	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C51	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C52	.47 200V		P288N-47		CUB2P47	2DP-5-474	GEM-2047	2TM-P47
C53	10 NPO 10%		NPO-DI 10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C54	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C55	10 NPO 10%		NPO-DI 10	DTZ-10	C10Q10C	CCTO-100	CNO-410	10TCC-Q10
C56	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C57	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C58	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C59	47 N150 10%						*	10TCP-Q47
C60	12 N1500 10%						*	
C61	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C62	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C63	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C64	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C65	100 N750 10%		N750-DI 100	DTN-100	C10T1U	CCTN-101	CN7-310	10TCU-T10
C66	27 NPO 10%		NPO-DI 25	TCZ-27	C10Q27C	CCTO-270	CNO-427	10TCC-Q27
C67	100 N750 10%		N750-DI 100	DTN-100	C10T1U	CCTN-101	CN7-310	10TCU-T10
C68	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C69	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20

PARTS LIST AND DESCRIPTIONS (Continued)

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C70	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C71	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C72	.0047 200V		P288N-0047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C73	.47 200V		P288N-47		CUB2P47	2DP-5-474	GEM-2047	2TM-P47

† Alternate Value.
# Bell Sound Part Number.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	Bell Sound PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	250K	½	15B47	AB-51	A47-250K-Z	Bi3-130	U44	FM Level (Note 1)
B	Shaft			AK-1	FKS-1/4	TM4	Not Req.	
R2A	10K	½	15B74	AB-15	A47-10K-Z	Bi3-116	SU-20	AM Level
B	Shaft			AK-1	FKS-1/4	TM4	Not Req.	

Note 1. Some versions may use 10K in this application (Part #15B74).

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R3	2200Ω	
R4	100Ω	
R5	1meg	
R6	2200Ω	
R7	820Ω	
R8	10K	
R9	100K	
R10	100Ω	
R11	2.2meg	
R12	4700Ω	
R13	10K	
R14	5600Ω	
R15	330Ω	
R16	270Ω	Note 1
R17	1meg	
R18	270Ω	
R19	150Ω	
R20	100K	
R21	100K	

ITEM No.	RATING	REMARKS
R22	47K	
R23	270Ω	
R24	100K	
R25	1meg	
R26	100K	
R27	27K	
R28	1500Ω	
R29	1000Ω	
R30	6800Ω	
R31	6800Ω	
R32	68Ω	
R33	68K	
R34	100K	
R35	1meg	
R36	1meg	
R37	1000Ω	
R38	470K	
R39	1500Ω	
R40	100Ω	

ITEM No.	RATING	REMARKS
R41	470K	
R42	22K	
R43	1500Ω	
R44	470K	
R45	270Ω	
R46	680Ω	
R47	270Ω	
R48	2.2meg	
R49	47K	
R50	1meg	
R51	56K	
R52	8200Ω	
R53	1meg	
R54	1000Ω	
R55	12K	
R56	47K	
R57	250Ω 5W	IRC #PW5-250Ω
R58	250Ω 5W	IRC #PW5-250Ω

Note 1. Not used in some versions.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		Bell Sound PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	FM Ant. Trans.	32B18						
L2	FM Ant. Coil	31B45						
L3	RF Choke	31A43	19-1000	19-1000	BC-561	4602		.9uh
L4	RF Choke	31A44	19-2004	19-2004		4586		.3uh
L5	RF Choke	31A22	19-1001	19-1001	BC-562	4604		1.6uh
L6	Fil. Choke	31A36	19-1001	19-1001	BC-562	4604		1.5uh
L7	FM RF Coil	31B45						
L8	FM Osc. Coil	31B41						
L9	RF Choke	31A22	19-1001	19-1001	BC-562	4604		1.6uh
L10	RF Choke	31A43	19-1000	19-1000	BC-561	4602		.9uh
L11	Fil. Choke	31A18	19-1003	19-1003	BC-564	4608		3.9uh
L12	1st FM IF Trans.	32C100	16-3487	16-3487	FM-254	1463		
L13	2nd FM IF Trans.	32C81 ①	16-3487	16-3487	FM-254	1463		
L14	3rd FM IF Trans.	32C81 ①	16-3487	16-3487	FM-254	1463		

COILS (RF-IF) (cont)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		Bell Sound PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L15	Ratio Det.	32C86	17-3498	17-3498	FM-255	1465		
L16	AM Ant. Trans.	32C87	14-1410	14-1410	BC-380 *	A-5495-A*		
L17	AM RF Trans.	32C88	14-1411	14-1411	BC-382 *	A-5495-RF*		
L18	AM Osc. Coil	31A1	14-1055	14-1055	BC-393	70-OSC		
L19	1st AM IF Trans.	32C80						
L20	2nd AM IF Trans.	32C80						
L21	3rd AM IF Trans.	32C79	16-6758	16-6758	BC-353	12-C2		
L22	10KC Filter	31A38						
L23	RF Choke	31A18	19-1003	19-1003	BC-564	4608		3.9uh
L24	Fil. Choke	31A21	19-1002	19-1002	SW-630	4606		2.9uh

① Alternate Part #32B81.
* Fabricate Mounting.

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA					
	PRI.	SEC. 1	SEC. 2	Bell Sound PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V@ .56A	300 VCT @.075A	6.3V@ 5A	32B84						

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			Bell Sound PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG	1A 125V S/B			313001 (3AG 1A 125V S/B)	342001	MDL 1	HKP

MISCELLANEOUS

ITEM No.	PART NAME	Bell Sound PART No.	NOTES
M2	Tuning Cap.	25C15	FM, 3 Gang
M3	Tuning Cap.	25C14	AM, 3 Gang (Ant. 17-415mmf, RF 27-422mmf, Osc. 16-150mmf)
M4	Switch	43B58	Selector (3 Position, Lever Type)
M5	Switch	43B61	FM AFC (Off-On) (1 Pole 2 Position, Lever Type)
M6	Switch	43B63	AM (2 Pole 2 Position, Lever Type)
M7	Switch	43B64	AC Off-On (Lever Type)
M8	Meter	46B7	FM Tuning
M9	Meter	46B6	AM Tuning

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	84A38	Tuning
Knob	84A29	Switches
Dial Glass	94B56	

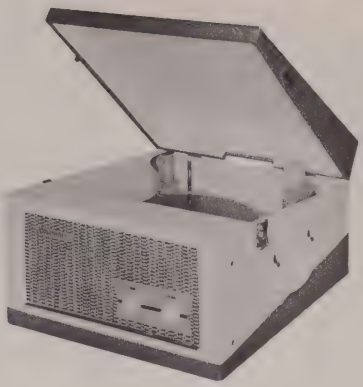
WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

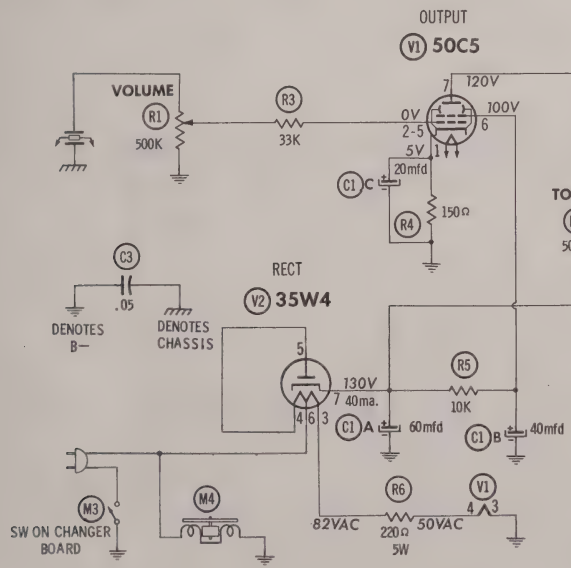
PHOTOFACT® Folder

COLUMBIA
MODEL C1008G



TRADE NAME	Columbia Model C1008G
MANUFACTURER	CBS Electronics, 100 Endicott Street, Danvers, Mass.
TYPE SET	AC Operated 2 Tube Phono Amplifier With 4 Speed Automatic Record Changer
POWER SUPPLY	110 - 120 Volts AC, 60 Cycles RATING 25 Watts, .23 Amp. @117 Volts AC (Less Motor)

FOR SERVICE INFORMATION ON RECORD CHANGER — SEE MONARCH UA8 — PHOTOFACT SET 381 FOLDER 11
OR RECORD CHANGER MANUAL RC-11



A PHOTOFACT STANDARD NOTATION SCHEMATIC

Pin No.	V1	V2
1	150Ω	NC
2	33K	TP
3	0Ω	270Ω
4	50Ω	305Ω
5	33K	305Ω
6	† 10K	295Ω
7	† 160Ω	20K(Min)

† MEASURED FROM PIN 7 OF V2.
NC NO CONNECTION TP TIE POINT

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COLUMBIA
MODEL C1008G
COLUMBIA
MODEL C1008G
SET 505 FOLDER 4

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (GENERAL ELECTRIC • RAYTHEON • SYLVANIA •)
V1	Output	50C5
V2	Rectifier	35W4

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA COLUMBIA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	60	150		PRS3800	BBRT84215	TCT3119	TDLT-7	TVA-3455	
B	40	150							
C	20	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C3	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S5

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA COLUMBIA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500K	½	9B570	B-60	A47-500K-Z	Q13-133	U48	Volume
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R2A	50K	½	9B639	B-31	A47-50K-S	Q11-123	U35	Tone
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R3	33K	
R4	150Ω	

ITEM No.	RATING	REMARKS
R5	10K	

ITEM No.	RATING	REMARKS
R6	220Ω 10W	IRC #PW10-220Ω

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA COLUMBIA PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	2300Ω	3-4Ω	3B242	A-3025	AU-605	A-3332	24S53	S-12X	

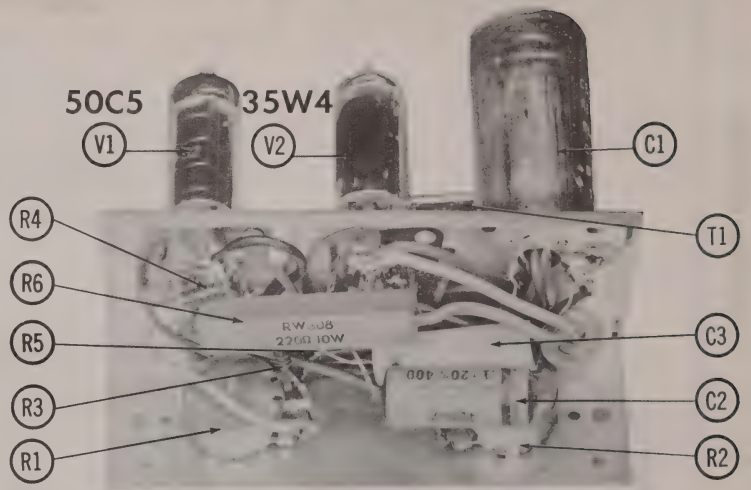
SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA COLUMBIA PART No.	REPLACEMENT DATA QUAM PART No.	NOTES
SP1	4"	PM	3-4Ω	1B102	4A1	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA COLUMBIA PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. NEEDLE	JENSEN PART No. CARTRIDGE	JENSEN PART No. NEEDLE	SONOTONE PART No. CARTRIDGE	SONOTONE PART No. NEEDLE
M1		420TS (TB)	N8-1 N8-3	46T		49			

CHASSIS—BOTTOM VIEW



PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA COLUMBIA PART No.	REPLACEMENT DATA JENSEN PART No.	REMARKS
M2	(LP)	CRA-55X † or CRA-55XD ♦	† Jewel ♦ Diamond
	(78 RPM)	CRA-55 † or CRA-55D ♦	

MISCELLANEOUS

ITEM No.	PART NAME	COLUMBIA PART No.	NOTES
M3	Switch		Off-On (Part of Changer)
M4	Motor		Phono Drive

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	8B523	Gray
Cabinet	17B886	Gray, White

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting) ..... Use BELDEN No. 8401
Phono Pick-up Arm Cable ..... Use BELDEN No. 8430 (Two Conductor - Twisted)

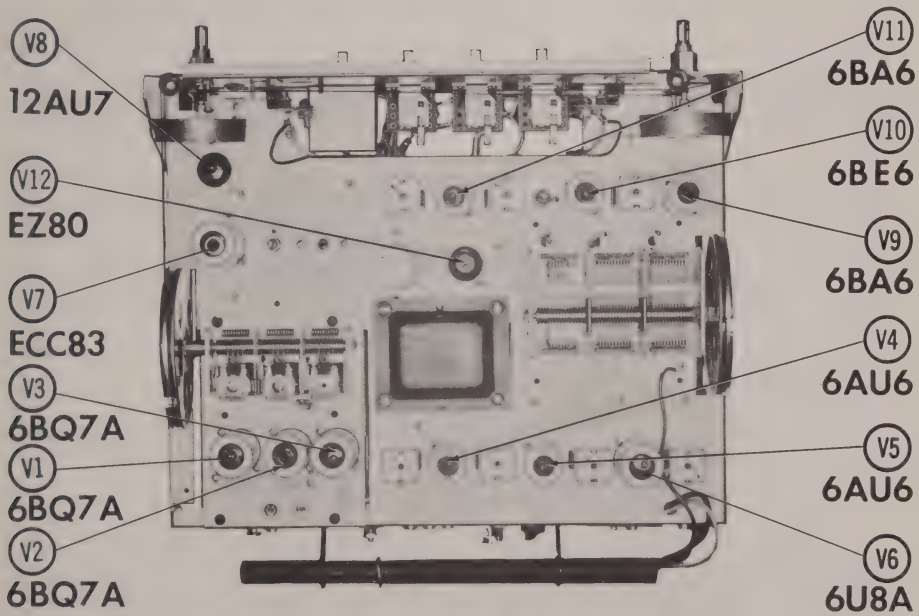
PHOTOFACT® Folder

GROMMES
MODEL 103GT

GROMMES
MODEL 103GT

TRADE NAME	Grommes Model 103GT		
MANUFACTURER	Precision Electronics, Inc., 9101 King Ave., Franklin Park, Illinois		
TYPE SET	AC Operated 12 Tube FM-AM Tuner		
POWER SUPPLY	110-120 Volts AC, 60 Cycles	RATING	56 Watts, .5 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	535 — 1620KC	FREQ. MOD.	88 — 108 MC

GROMMES
MODEL 103GT



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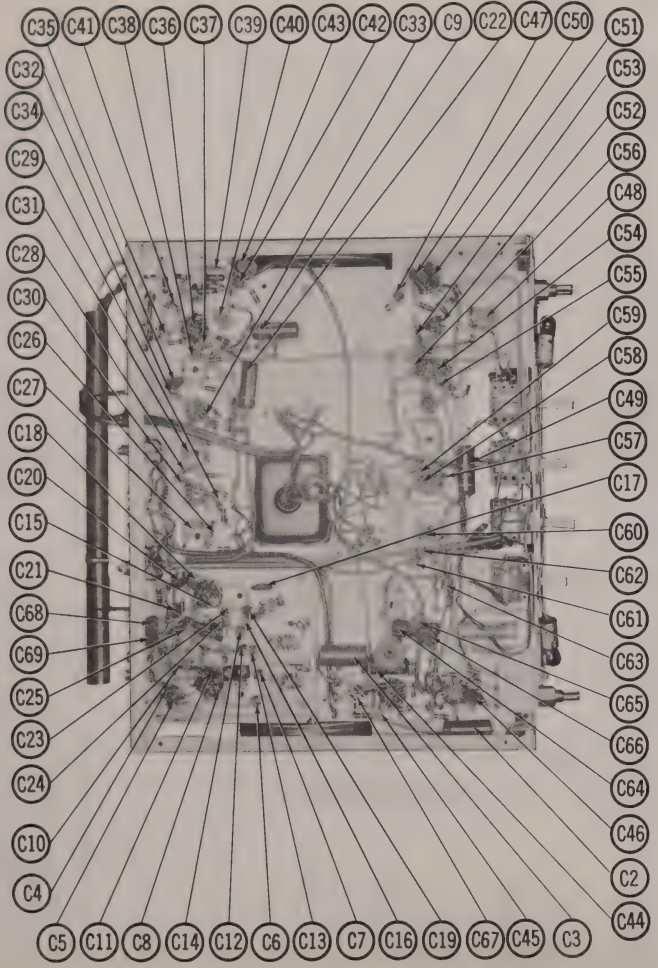
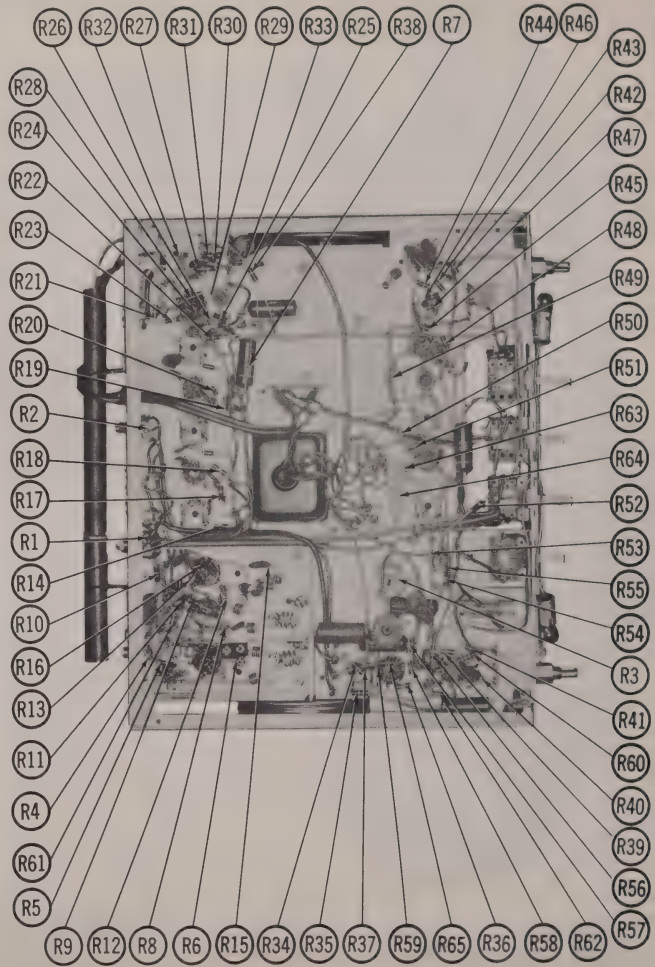
JL964

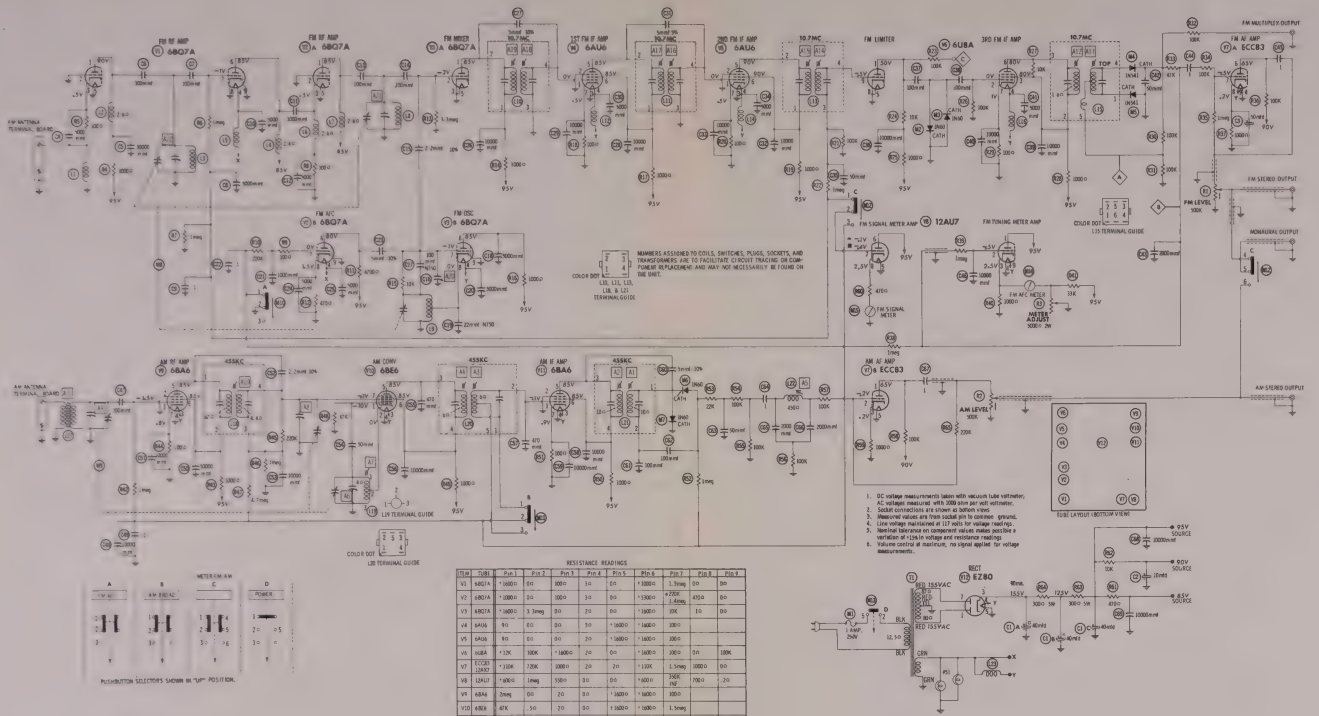
SET 505 FOLDER 5



CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION



NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter, AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±5% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

RESISTANCE READINGS

ITEM	TUBE	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6	PIN 7	PIN 8	PIN 9
V1	6BQ7A	*1000Ω	0Ω	800Ω	3Ω	0Ω	*1000Ω	1.5meg	0Ω	0Ω
V2	6BQ7A	*1000Ω	0Ω	700Ω	3Ω	0Ω	*1500Ω	∞250K 1.4meg	470Ω	0Ω
V3	6BQ7A	*1400Ω	1.3meg	0Ω	2Ω	0Ω	*1600Ω	22K	1Ω	0Ω
V4	6AU6	9Ω	0Ω	0Ω	3Ω	*1800Ω	*1600Ω	330Ω		
V5	6AU6	9Ω	0Ω	0Ω	2Ω	*1600Ω	*1600Ω	330Ω		
V6	6U8A	*12K	100K	*1600Ω	2Ω	0Ω	*1600Ω	330Ω	0Ω	100K
V7	ECC83 12AX7	*100K	120K	2000Ω	2Ω	2Ω	*120K	1.5meg	1000Ω	0Ω
V8	12AU7	*690Ω	1meg	550Ω	0Ω	0Ω	*620Ω	330K 1MF	390Ω	120
V9	6BA6	2meg	0Ω	2Ω	0Ω	*1620Ω	*1600Ω	330Ω		
V10	6BE6	47K	150	2Ω	0Ω	*1620Ω	*1600Ω	1.5meg		
V11	6BA6	1meg	0Ω	2Ω	0Ω	*1600Ω	*1600Ω	330Ω		
V12	EZ80 DIODE	800Ω	NC	1	2Ω	0Ω	NC	EF0	NC	NC

1 THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
* MEASURED FROM PIN 3 OF V12.
■ MEASURED IN "AFC" POSITION.

NC NO CONNECTION

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM ARE SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION CONTROL VIEWED FROM SHAFT END

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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GROMMES MODEL 103GT

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use only enough generator output to provide a usable indication.

Suggested Alignment Tools:

A1 thru A4, A10	GENERAL CEMENT #5097, 8727 WALSCO #2515
A5, A20	GENERAL CEMENT #8721, 8722 WALSCO #2519
A7	GENERAL CEMENT #5003, 8271, 8275, 8276, 8609, 8721, 8722, 9150, 9298 WALSCO #2516, 2518, 2519
A6, A8, A9, A21, A22	GENERAL CEMENT #5004, 5008, 5009 WALSCO #2520
A12 thru A19	GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440 WALSCO #2526, 2543, 2544, 2545

AM ALIGNMENT — SELECTOR IN AM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	High side thru .01mfd to pin 7 (grid) of Converter. Low side to chassis.	455KC (400∿ Mod.)	(AM) Tuning gang fully open.	AC probe to AM Output jack. Common to chassis.	A1, A2, A3, A4	Adjust for maximum output.
2.	"	455KC (10KC Mod.)	"	"	A5	Adjust for MINIMUM output.
3.	Across AM Antenna terminals.	1500KC	1500KC	"	A6	Adjust for maximum output.
4.	"	600KC	600KC	"	A7	"
5.	"	1400KC	Tune to 1400KC Signal.	"	A8, A9	Adjust for maximum output. Repeat Steps 3 and 4.
6.	"	600KC	Tune to 600KC Signal.	"	A10, A11	"

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM—SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	High side thru .01mfd to pin 2 (grid) of 3rd FM IF Amp. Low side to chassis.	10.7MC (Unmod.)	(FM) Point of non-interference.	DC probe thru 1meg to point Ⓐ. Common to chassis.	A12	Adjust for maximum deflection.
8.	"	"	"	DC probe to point Ⓑ. Common to chassis.	A13	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
9.	High side thru .01mfd to pin 2 (grid) of FM Mixer. Low side to chassis.	"	"	DC probe to point Ⓒ. Common to chassis.	A14, A15, A16, A17, A18, A19	Adjust for maximum deflection.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE— SELECTOR IN FM POSITION

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
7.	High side thru .01mfd to pin 2 (grid) of 3rd FM IF Amp. Low side to chassis.	10.7MC	(FM) Point of non-interference.	Vert. amp. thru 47K to point Ⓐ. Low side to chassis.	A12	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown.
8.	"	"	"	Vert. amp. to point Ⓑ. Low side to chassis.	A13	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A12 for maximum amplitude and straightness of cross-over lines.
9.	High side thru .01mfd to pin 2 (grid) of FM Mixer. Low side to chassis.	"	"	Vert. Amp. to point Ⓒ. Low side to chassis.	A14, A15, A16, A17, A18, A19	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown.

FM RF ALIGNMENT—SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
10.	High side thru 270Ω to FM antenna terminal. Low side to chassis.	108MC (Unmod.)	FM 108MC	DC probe to point Ⓐ. Common to chassis.	A20, A21, A22	Adjust for maximum deflection.

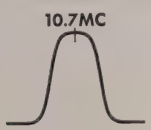
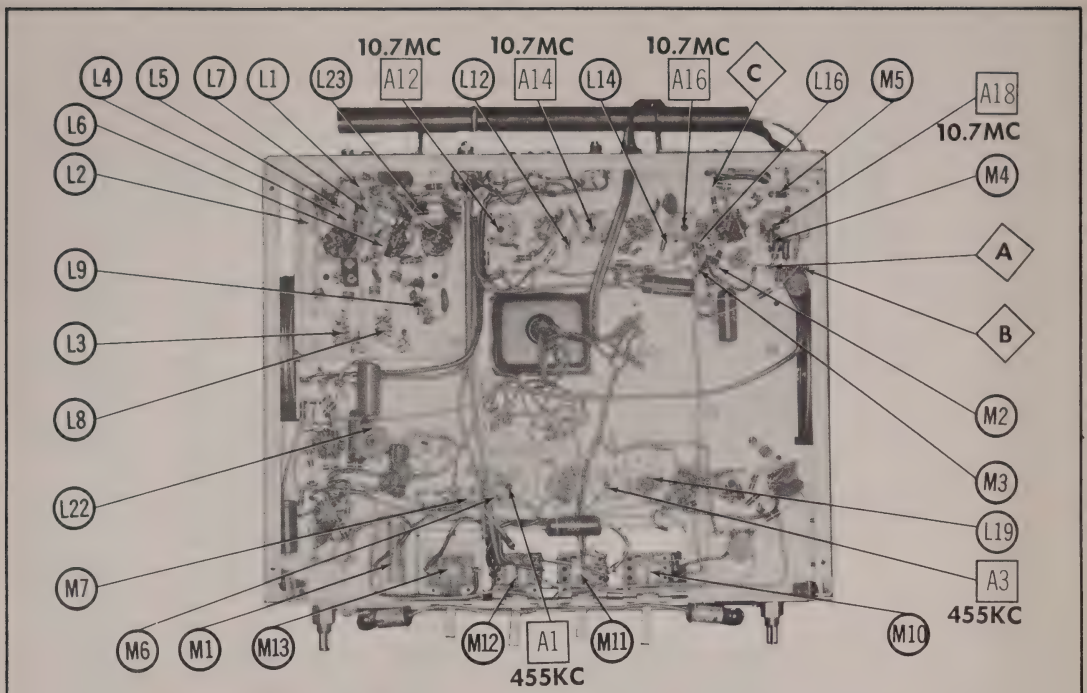
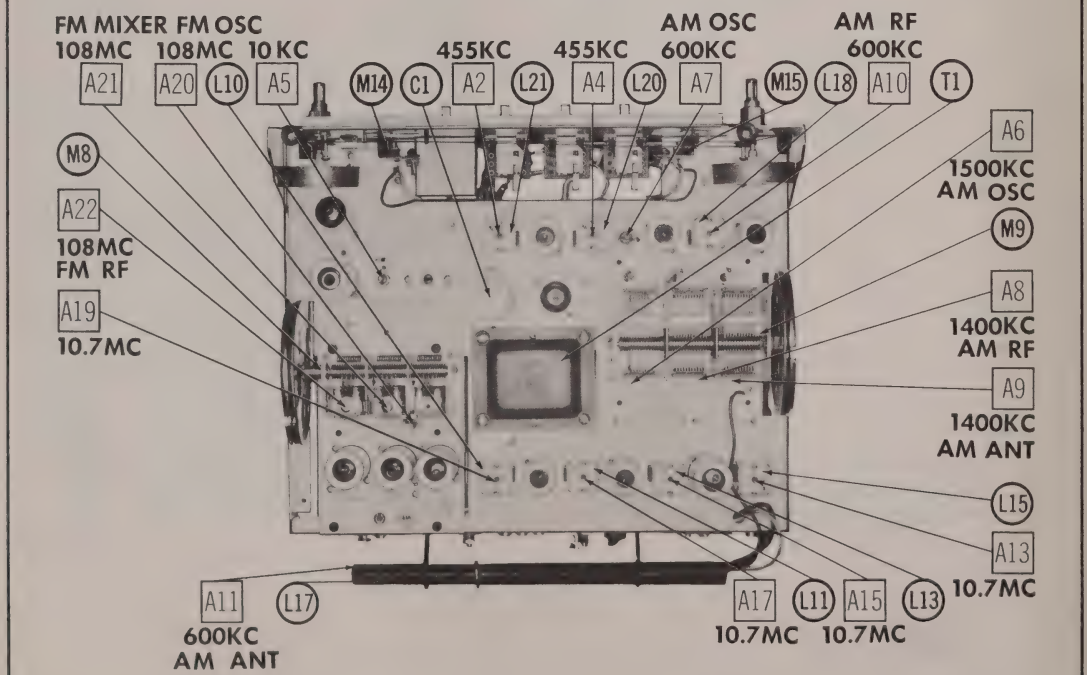


FIG. 1

FIG. 2



CHASSIS BOTTOM VIEW - ALIGNMENT, INDUCTOR & MISC. IDENT.



CHASSIS - TOP VIEW

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE
V1	FM RF Amplifier	6BQ7A (ECC85) *
V2	FM RF Amp. -FM AFC	6BQ7A (ECC85) *
V3	FM Mixer - Osc.	6BQ7A (ECC85) *
V4	1st FM IF Amplifier	6AU6
V5	2nd FM IF Amplifier	6AU6
V6	FM Limiter- 3rd FM IF Amp.	6U8A
V7	FM AF Amp. -AM AF Amp	ECC83/12AX7
V8	FM Signal Meter Amp. - FM Tuning Meter Amp.	12AU7
V9	AM RF Amplifier	6BA6
V10	AM Converter	6BE6
V11	AM IF Amplifier	6BA6
V12	Rectifier	EZ80/6V4

* Alternate

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA GROMMES PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	■40	200			B0240	FP221	TMD-27	TVLS-3541 *	
B	▲40	200			BR4025	TC58	TD-40-250		
C	40	200							
C2	10	250		PRS1620	BR1045	TC52	TD-10-250	TVA-1504	
C3	50	50		PRS50V50	BR505	TC39	TD-50-50	TVA-1308	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C4	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C5	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C6	100		SI 100	D6-101	L10T1	CCD-101	GP310	10TS-T10
C7	100		SI 100	D6-101	L10T1	CCD-101	GP310	10TS-T10
C8	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C9	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P1
C10	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C11	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C12	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C13	100		SI 100	D6-101	L10T1	CCD-101	GP310	10TS-T10
C14	100		SI 100	D6-101	L10T1	CCD-101	GP310	10TS-T10
C15	2.2 10%		NPO-SI 2.2	TCZ-2R2	C10V22C	CCTO-2R2	CNO-522	10TCC-V22
C16								
C17	100 N750		N750-DI 100	DTN-100	C10T1U	CCTN-101	CN7-310	10TCU-T10
C18	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C19	22 N750		N750-DI 22	DTN-22	C10Q22U	CCTN-220	CN7-422	10TCU-Q22
C20	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C21	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C22	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P1
C23	5 10%		NPO-SI 5.0	TCZ-4R7	C10V5C	CCTO-050	CNO-547	10TCC-V50
C24	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C25	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C26	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C27	5 10%		NPO-SI 5.0	TCZ-4R7	C10V5C	CCTO-050	CNO-547	10TCC-V50
C28	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C29	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C30	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C31	5 10%		NPO-SI 5.0	TCZ-4R7	C10V5C	CCTO-050	CNO-547	10TCC-V50
C32	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C33	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C34	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C35	50		SI 50	D6-500	L10Q5	CCD-500	GP450	10TS-Q50
C36	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C37	100		SI 100	D6-101	L10T1	CCD-101	GP310	10TS-T10
C38	100		SI 100	D6-101	L10T1	CCD-101	GP310	10TS-T10
C39	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C40	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C41	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C42	50		SI 50	D6-500	L10Q50	CCD-500	GP450	10TS-Q50
C43	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C44	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P1
C45	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P1
C46	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C47	100		SI 100	D6-101	L10T1	CCD-101	GP310	10TS-T10
C48	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C49	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P1
C50	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C51	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C52	2.2 10%		NPO-SI 2.2	TCZ-2R2	C10V22C	CCTO-2R2	CNO-522	10TCC-V22
C53	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C54	50		SI 50	D6-500	L10Q5	CCD-500	GP450	10TS-Q50
C55	470		BPD-00047	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C56	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C57	470		BPD-00047	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C58	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C59	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C60	5 10%		NPO-SI 5.0	TCZ-4R7	C10V5C	CCTO-050	CNO-547	10TCC-V50
C61	100		SI 100	D6-101	L10T1	CCD-101	GP310	10TS-T10
C62	100		SI 100	D6-101	L10T1	CCD-101	GP310	10TS-T10
C63	50		SI 50	D6-500	L10Q5	CCD-500	GP450	10TS-Q50
C64	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P1
C65	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C66	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C67	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P1
C68	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C69	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10

CONTROLS

ITEM No.	RATING RESIST-ANCE	RATING WATTS	REPLACEMENT DATA GROMMES PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1	500K	1/4	GH-3794-2A	JL-504	44-500K-W			FM Level
R2	500K	1/4	GH-3794-2A	JL-504	44-500K-W			AM Level
R3	5000Ω	2(WW)			39-5000	112-5000	FL5K	Meter Adjust

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R4	1000Ω	
R5	100Ω	
R6	1meg	
R7	1meg	
R8	100Ω	
R9	100Ω	
R10	220K	
R11	4700Ω	
R12	470Ω	
R13	3.3meg	
R14	1000Ω	
R15	10K	
R16	1000Ω	
R17	1000Ω	
R18	100Ω	
R19	1000Ω	
R20	100Ω	
R21	100K	
R22	1meg	
R23	100K	
R24	10K	
R25	1000Ω	
R26	100K	
R27	10K	
R28	1000Ω	
R29	100Ω	
R30	100K	
R31	100K	
R32	100K	
R33	47K	
R34	100K	
R35	1meg	
R36	100K	
R37	1000Ω	
R38	1meg	
R39	1meg	
R40	1000Ω	
R41	33K	
R42	1meg	
R43	1000Ω	
R44	100Ω	
R45	220K	
R46	1meg	
R47	4.7meg	
R48	47K	
R49	1000Ω	
R50	1000Ω	
R51	100Ω	
R52	1meg	
R53	22K	
R54	100K	
R55	100K	
R56	100K	
R57	100K	
R58	100K	
R59	1000Ω	
R60	470Ω	
R61	470Ω	
R62	10K	
R63	300Ω 5W	IRC#PW5 300Ω
R64	300Ω 5W	IRC#PW5 300Ω
R65	220K	

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		GROMMES PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	FM Ant. Coil			4584		.24uh ①
L2	RF Choke		BC-564	4608		3.3uh ①
L3	FM RF Coil					
L4	RF Choke		BC-564	4608		3.3uh ①
L5	Fil. Choke		BC-562	4604		1.7uh
L6	Cathode Choke		BC-564	4608		3.3uh ①
L7	RF Choke		BC-564	4608		3.3uh ①
L8	FM Mixer Coil					
L9	FM Osc. Coil					
L10	1st FM IF Trans.		FM-254	1463		
L11	2nd FM IF Trans.		FM-254	1463		
L12	Fil. Choke		BC-562	4604		1.7uh
L13	3rd FM IF Trans.		FM-254	1463		
L14	Fil. Choke		BC-562	4604		1.7uh
L15	Discriminator		FM-255	1465		
L16	Fil. Choke		BC-562	4604		1.7uh
L17	Loopstick		BC-418	705-A		
L18	AM RF Trans.					
L19	AM Osc. Coil		BC-393	70-OSC		
L20	1st AM IF Trans.					
L21	2nd AM IF Trans.		BC-353	12-C2	RF-2	
L22	10KC Filter					
L23	Fil. Choke		BC-562	4602		1.7uh

① IRC Part #CLA

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						NOTES
	PRI.	SEC. 1	SEC. 2	GROMMES PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	117V ② .5A	310 VCT ② .090A	6.3V ② 4.4A	TP-17						

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			GROMMES PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG	1A 250V			312002 (3AG 1A 250V)	357001	AGC 1	4405

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		GROMMES PART No.	CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M2	1N60		1N60	1N60	1N60	Tuning Ind. Rec't. (Pigtail)
M3	1N60		1N60	1N60	1N60	Tuning Ind. Rec't. (Pigtail)
M4	1N541		1N636	1N295	1N295	FM Det. (Pigtail) } Matched
M5	1N541		1N636	1N295	1N295	FM Det. (Pigtail) } Pair
M6	1N60		1N60	1N60	1N60	AM Det. (Pigtail)
M7	1N60		1N60	1N60	1N60	AM Det. (Pigtail)

MISCELLANEOUS

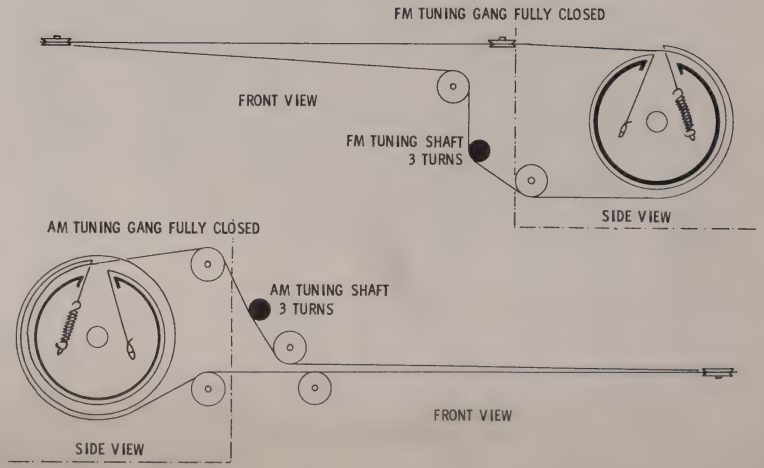
ITEM No.	PART NAME	GROMMES PART No.	NOTES
M8	Tuning Cap		FM, 3 Gang
M9	Tuning Cap.		AM, 3 Gang(Ant. 24-524mmf, RF 24-516mmf, Osc. 25-227mmf)
M10	Switch		FM-AFC (Pushbutton Type)
M11	Switch		AM Broad (Pushbutton Type)
M12	Switch		Meter (Pushbutton Type)
M13	Switch		Power Off-On (Pushbutton Type)
M14	Meter		FM AFC
M15	Meter		Signal

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

DIAL CORD STRINGING



PHOTOFACT® Folder

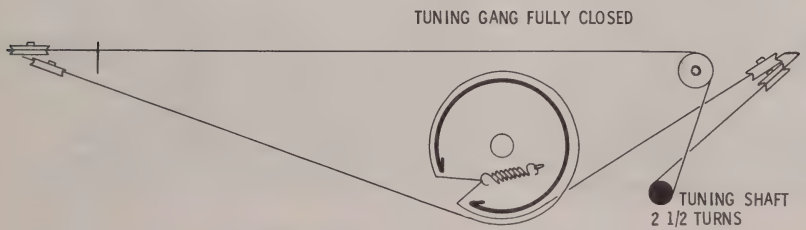
**LAFAYETTE
MODEL LT-80**

LAFAYETTE
MODEL LT-80

LAFAYETTE
MODEL LT-80

TRADE NAME	Lafayette Model LT-80
SUPPLIER	Lafayette Radio, 165-08 Liberty Ave., Jamaica 33, N. Y.
TYPE SET	AC Operated 8 Tube FM Tuner
POWER SUPPLY	105 — 125 Volts AC, 60 Cycles
TUNING RANGE — FREQ. MOD.	88 — 108MC RATING 34 Watts, .32 Amp. @117 Volts AC

DIAL CORD STRINGING



FRONT VIEW

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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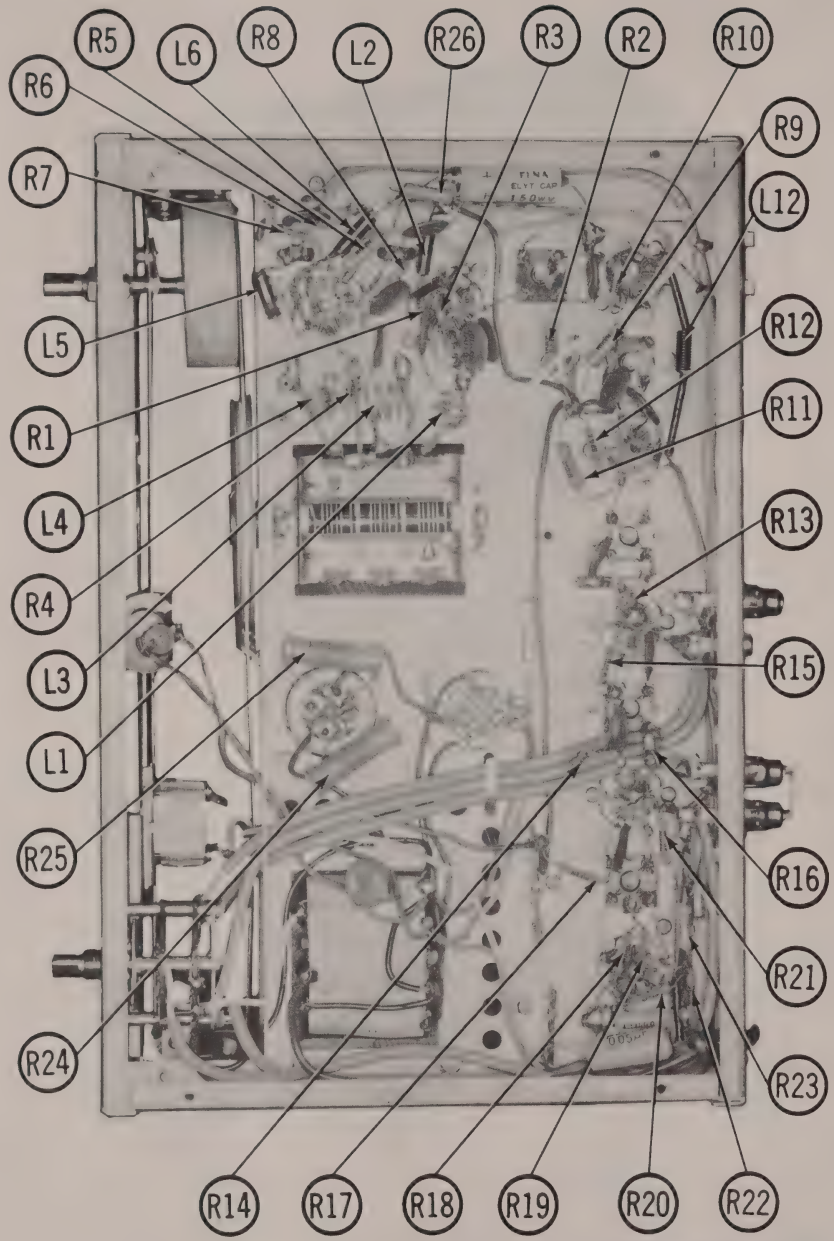
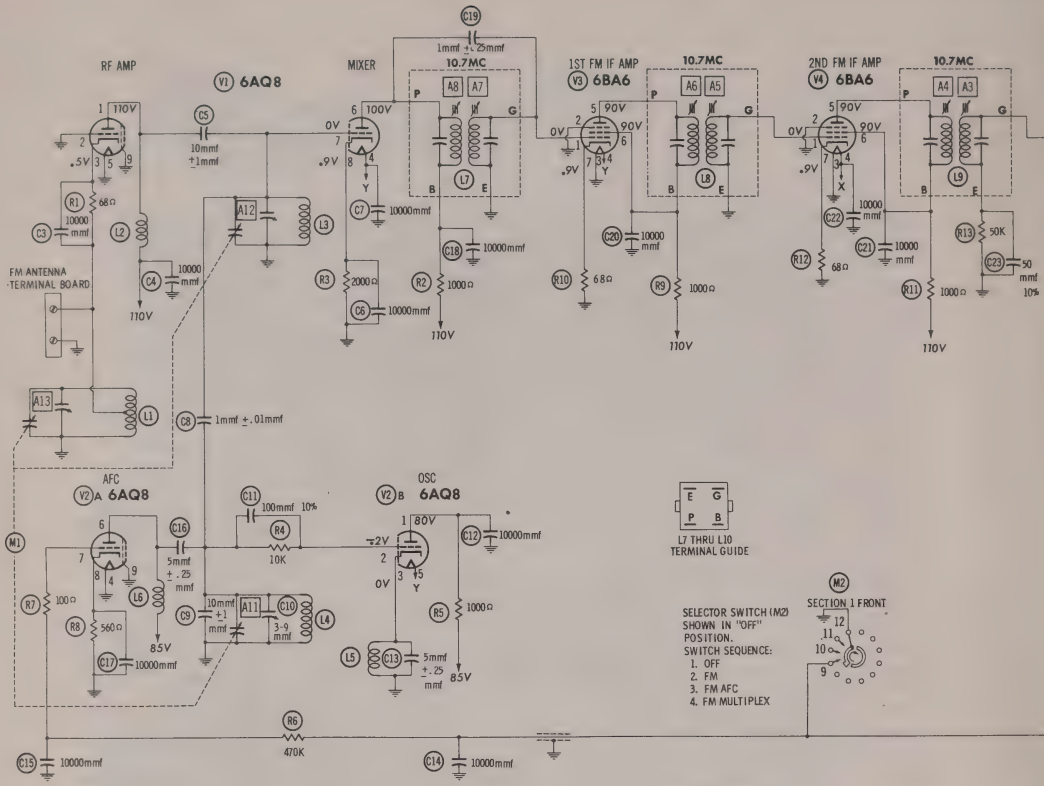
JJ982

SET 505 FOLDER 6



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION



1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. no signal applied for voltage measurements.

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6AQ8	†440Ω	0Ω	68Ω	.3Ω	0Ω	†1400Ω	.1Ω	2000Ω	0Ω
V2	6AQ8	†6400Ω	10K	.9Ω	0Ω	.3Ω	†5400Ω	470K ■3.5meg	560Ω	0Ω
V3	6BA6	.5Ω	0Ω	0Ω	.3Ω	†1400Ω	†1400Ω	68Ω		
V4	6BA6	.5Ω	0Ω	0Ω	.2Ω	†1400Ω	†1400Ω	68Ω		
V5	6AU6	50K	0Ω	0Ω	.2Ω	†10K	†10K	0Ω		
V6	6AU6	50K	0Ω	0Ω	.2Ω	†22K	†22K	0Ω		
V7	6AL5	0Ω	100K	.2Ω	0Ω	200K	0Ω	100K		
V8	6X4	120Ω	NC	.2Ω	0Ω	NC	130Ω	¶		

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 7 OF V8.
■ MEASURED IN "AFC" POSITION. NC NO CONNECTION.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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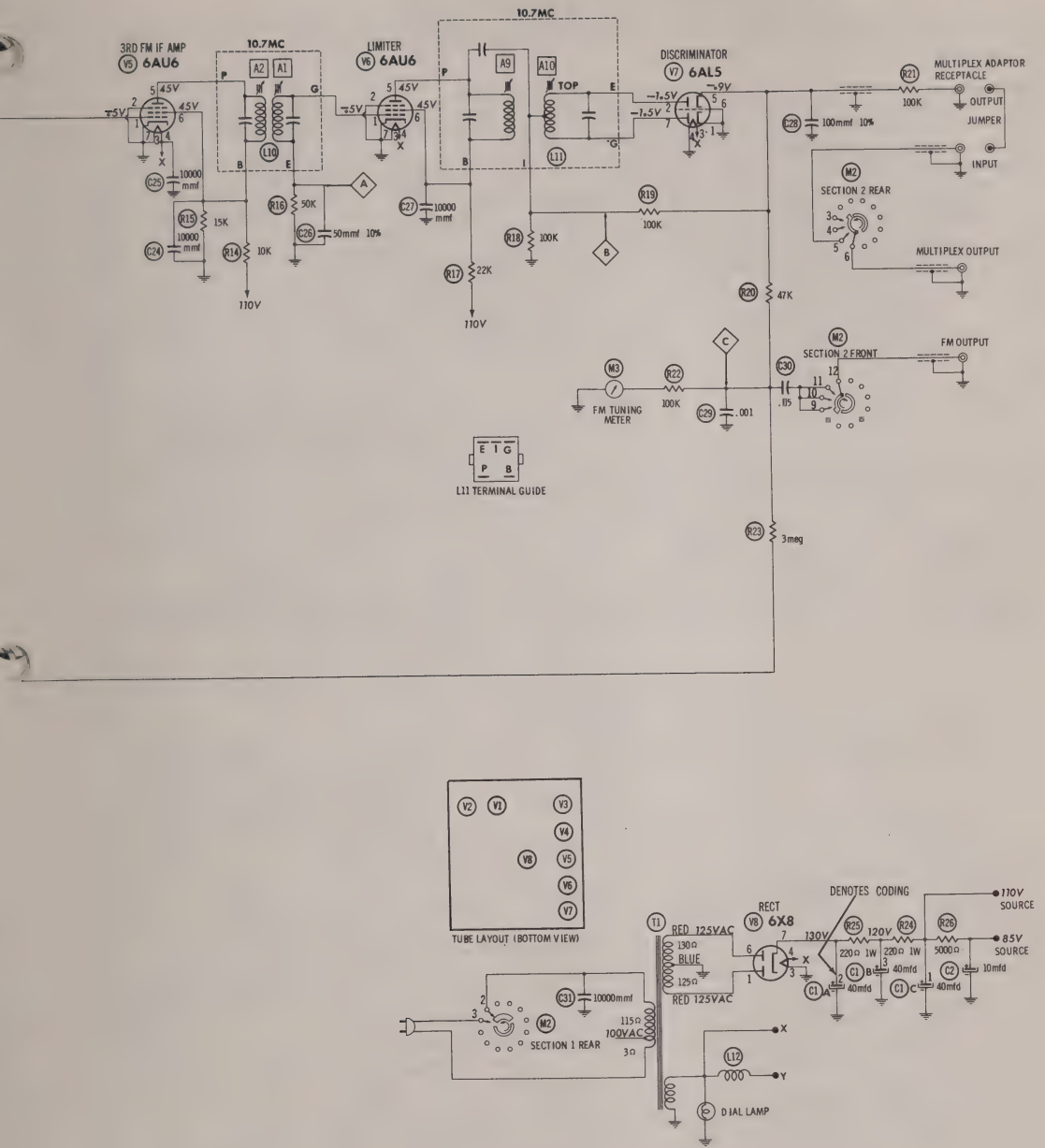

10.7MC
3RD FM IF AMP
V5 6AU6
10.7MC
A2
A1
LIMITER
V6 6AU6
A9
A10
TOP
DISCRIMINATOR
V7 6AL5
MULTIPLEX ADAPTOR RECEPTACLE
R21 100K
OUTPUT
JUMPER
INPUT
C28 100mmf 10%
M2 SECTION 2 REAR
MULTIPLEX OUTPUT
L10
L11
C25 10000 mmf
R15 15K
C24 10000 mmf
R14 10K
110V
R16 50K
C26 50mmf 10%
C27 10000 mmf
R17 22K
110V
R18 100K
R19 100K
R20 47K
M2 SECTION 2 FRONT
FM OUTPUT
C30 .05
M3 FM TUNING METER
R22 100K
C29 .001
L11 TERMINAL GUIDE
E T G
P B
R23 3meg

TUBE LAYOUT (BOTTOM VIEW)
V2 V1 V3 V4 V8 V5 V6 V7
T1
RED 125VAC
130Ω
BLUE
125Ω
RED 125VAC
RECT
V8 6X8
DENOTES CODING
110V SOURCE
85V SOURCE
130V
120V
R25
R24
R26
220Ω 1W
220Ω 1W
5000Ω
C1 B 40mfd
C1 C 40mfd
C2 10mfd
C1 A 40mfd
C31 10000mmf
M2 SECTION 1 REAR
115Ω
100VAC
3Ω
L12
DIAL LAMP

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Set Selector switch in FM position (AFC not functioning).

Suggested Alignment Tools: A1 thru A10... GENERAL CEMENT #8721, 8722
WALSCO #2519
A11, A12, A13... GENERAL CEMENT #5000, 5003, 5066, 8276, 8290, 9087, 9089
WALSCO #2512, 2525, 2528

IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	High side thru .01mfd to pin 7 (grid) of Mixer. Low side to chassis.	10.7MC (Unmod.)	Point of non-interference.	DC probe to point Ⓐ. Common to chassis.	A1, A2, A3, A4, A5, A6, A7, A8	Adjust for maximum deflection.
2.	"	"	"	DC probe thru 1meg to point Ⓑ. Common to chassis.	A9	"
3.	"	"	"	DC probe to point Ⓒ. Common to chassis.	A10	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
1.	High side thru .01mfd to pin 7 (grid) of Mixer. Low side to chassis.	10.7MC (450KC Swp)	Point of non-interference.	Vert. Amp. to point Ⓐ. Low side to chassis.	A1, A2, A3, A4, A5, A6, A7, A8	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown.
2.	"	"	"	Vert. amp. thru 27K to point Ⓑ. Low side to chassis.	A9	"
3.	"	"	"	Vert. amp. to point Ⓒ. Low side to chassis.	A10	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A9 for maximum amplitude and straightness of cross-over lines.

RF ALIGNMENT

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.	High side thru 270Ω to antenna terminal. Low side to chassis.	108MC (Unmod.)	108MC	DC probe to point Ⓐ. Common to chassis.	A11	Adjust for maximum deflection.
5.	"	106MC	106MC	"	A12, A13	"

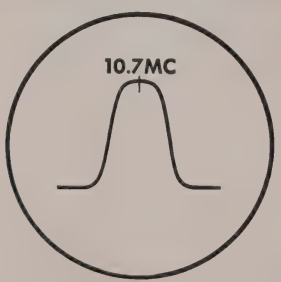


FIG. 1

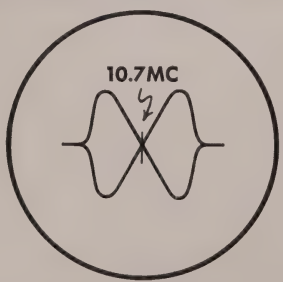


FIG. 2

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
	• GENERAL ELECTRIC • RAYTHEON • SYLVANIA •				
V1	RF Amp. -Mixer	6AQ8	V5	3rd IF Amplifier	6AU6
V2	Osc. -AFC	6AQ8	V6	Limiter	6AU6
V3	1st IF Amplifier	6BA6	V7	Discriminator	6AL5
V4	2nd IF Amplifier	6BA6	V8	Rectifier	6X4

ELECTROLYTIC CAPACITORS

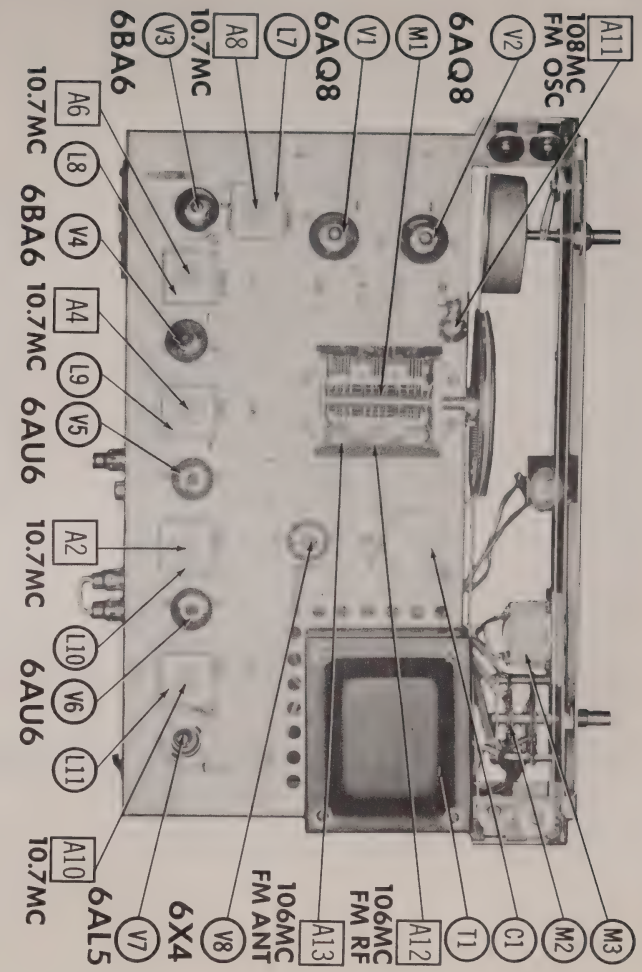
ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA LAFAYETTE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	40	150		AFH3-10	C0090	FP311.5	TMT-3127	TVL-3440	
B	40	150							
C	40	150							
C2	10	150		PRS1410	BBR10-150	TC42	TD-10-150	TVA-1406	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C4	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C5	10 + 1mmf		NPO-SI 10	TCZ-10	C10QJC	CCTO-100	CNO-410	10TCC-Q10
C6	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C7	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C8	1 + .01mmf		NPO-SI 1.0	TCZ-1			CNO-510	10TCC-V10
C9	10 + 1mmf		NPO-SI 10	TCZ-10	C10QJC	CCTO-100	CNO-410	10TCC-Q10
C10	3-9			829-10				
C11	100 10%		NPO-SI 100	DD-101	L10T1	CCD-101	GP310	10TS-T10
C12	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C13	5 + .25mmf		NPO-SI 5.0	TCZ-4R7	C10V5C	CCTO-050	CNO-547	10TCC-V50
C14	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C15	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C16	5 + .25mmf		NPO-SI 5.0	TCZ-4R7	C10V5C	CCTO-050	CNO-547	10TCC-V50
C17	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C18	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C19	1 + .25mmf		NPO-SI 1.0	TCZ-1			CNO-510	10TCC-V10
C20	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C21	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C22	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C23	50 10%		NPO-SI 50	DD-500	L10Q5	CCD-500	GP450	10TS-Q50
C24	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C25	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C26	50 10%		NPO-SI 50	DD-500	L10Q50	CCD-500	GP450	10TS-Q50
C27	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C28	100 10%		NPO-SI 100	DD-101	L10T1	CCD-101	GP310	10TS-T10
C29	.001 400V		P488N-001	D6-102	CUB6D1	6DP-1-102	GEM-421	6TM-D10
C30	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S5
C31	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R1	68Ω	
R2	1000Ω	
R3	2000Ω	
R4	10K	
R5	1000Ω	
R6	470K	
R7	100Ω	
R8	560Ω	
R9	1000Ω	

ITEM No.	RATING	REMARKS
R10	68Ω	
R11	1000Ω	
R12	68Ω	
R13	50K	
R14	10K	
R15	15K	
R16	50K	
R17	22K	
R18	100K	

ITEM No.	RATING	REMARKS
R19	100K	
R20	47K	
R21	100K	
R22	100K	
R23	3meg	
R24	220Ω 1W	
R25	220Ω 1W	
R26	5000Ω	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		LAFAYETTE PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Ant. Coil					
L2	RF Choke		SW-630	4528		3uh
L3	RF Coil					
L4	Osc. Coil					
L5	Cathode Choke		SW-630	4528		3uh
L6	RF Choke		SW-630	4528		3uh
L7	1st IF Trans.		FM-251	1463-PC †		
L8	2nd IF Trans.		FM-251	1463-PC †		
L9	3rd IF Trans.		FM-251	1463-PC †		
L10	4th IF Trans.		FM-251	1463-PC †		
L11	Discriminator		FM-253	1464-PC †		
L12	Fil. Choke		BC-562	4604		1.5uh

† Solder mounting lugs into mounting holes.

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						NOTES
	PRI.	SEC. 1	SEC. 2	LAFAYETTE PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	117V ⓐ .32A Tap ⓐ 100V (Not Used)	250 VCT ⓐ .050A	6.3V ⓐ 3A		P-3025②			24R09①		

① Tape 5V Winding.
② Tape 5V Winding and center tap on 6.3V Winding.

MISCELLANEOUS

ITEM No.	PART NAME	LAFAYETTE PART No.	NOTES
M1	Tuning Cap.		FM, 3 Gang
M2	Switch		Function, Power Off-On (Rotary Type)
M3	Meter		FM Tuning

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

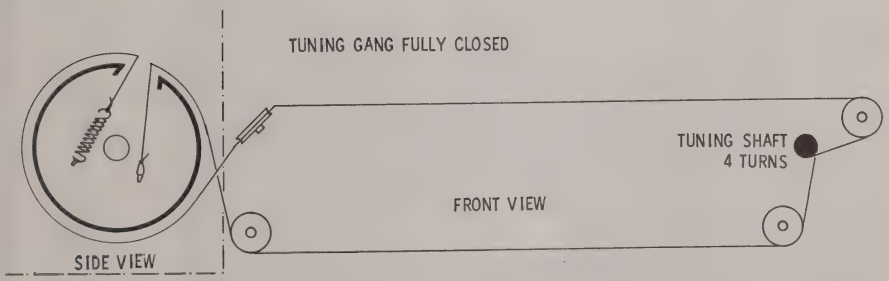
PHOTOFACT® Folder with CIRCUITRACE®

**MAGNAVOX CHASSIS
57-01-42, 57-03-00**

REPRESENTATIVE MODEL
USING CHASSIS 57-01-42

TRADE NAME	Magnavox Chassis 57-01-42, 57-03-00
MANUFACTURER	Magnavox Co., 2131 Bueter Road, Fort Wayne 4, Indiana
TYPE SET	Externally Powered 8 Tube FM-AM Tuner with Stereo Preamplifier
TUNING RANGE	BROADCAST 540 - 1620KC FREQ. MOD. 88 - 108MC

DIAL CORD STRINGING



HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of JN941

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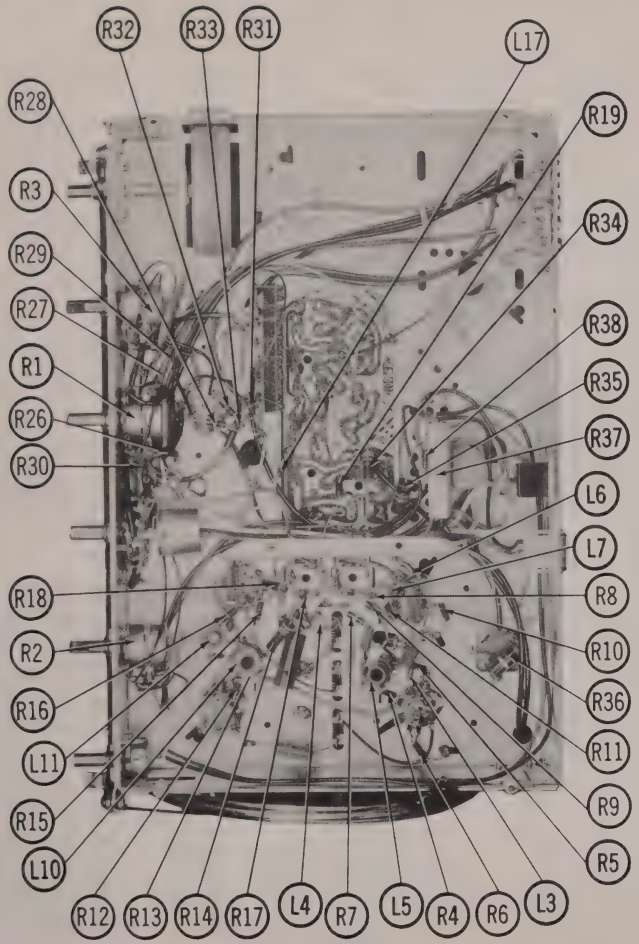
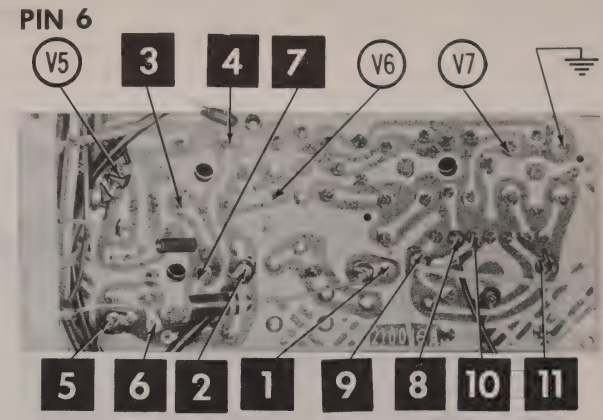
MAGNAVOX CHASSIS
57-01-42, 57-03-00

MAGNAVOX CHASSIS
57-01-42, 57-03-00

SET 505 FOLDER 7



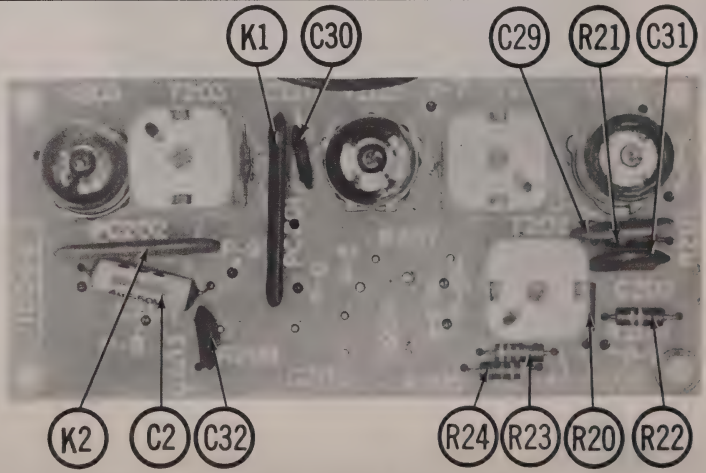
CHASSIS BOTTOM VIEW
RESISTOR & INDUCTOR IDENT.



PRINTED BOARD

A Howard W. Sams CIRCUITRACE Photo

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



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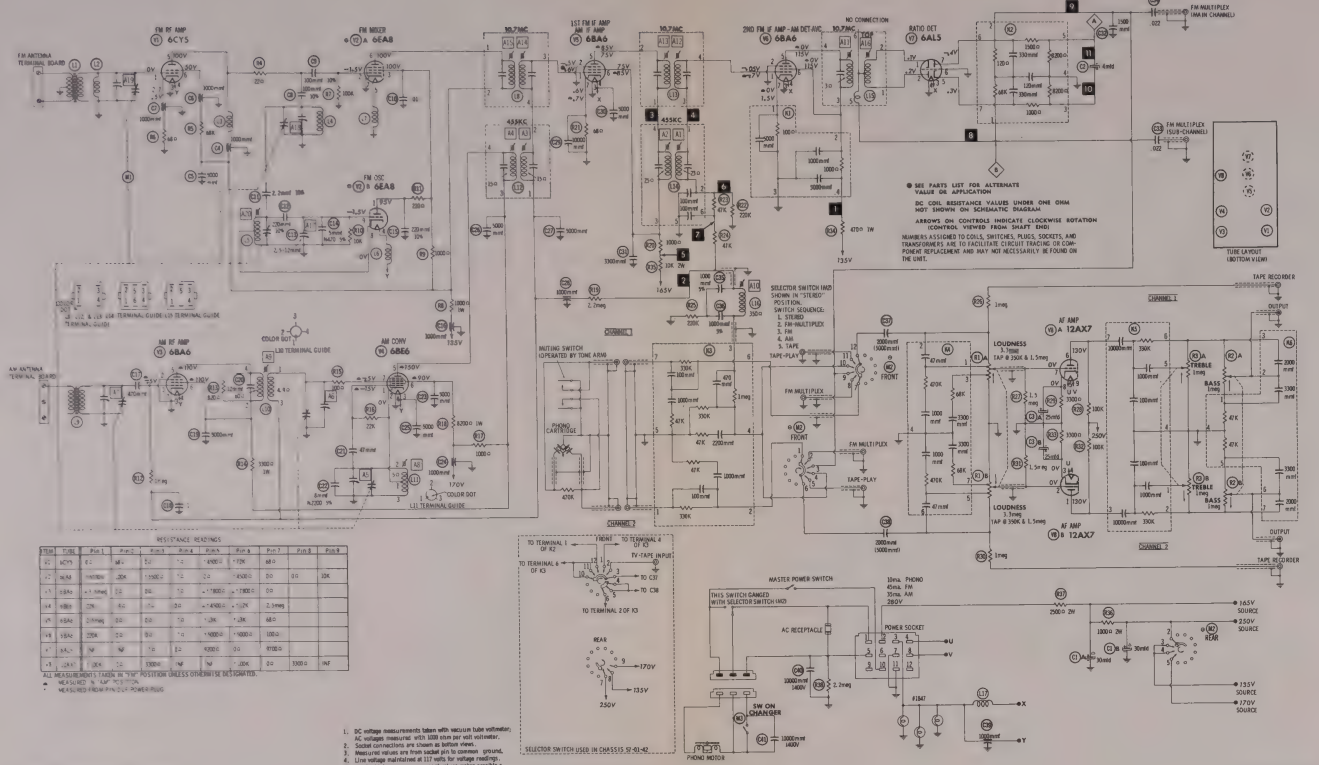

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6CY5	0	MP	0	0	400Ω	72K	68Ω		
V2	6EA8	100Ω	20K	150Ω	0	0	450Ω	0Ω	0Ω	10K
V3	6BA6	1.4meg	0	0Ω	0	0	180Ω	180Ω		
V4	6BE6	22K	82	47K	0	0	470Ω	22K	2.5meg	
V5	6BA6	2.5meg	0	0	0	0	33K	33K	68Ω	
V6	12AX7	220K	0	0Ω	0	0	1000Ω	0	100Ω	
V7	6AL5	MP	MP	0	0	0	4200Ω	0Ω	9700Ω	
V8	12AX7	220K	0	330Ω	MP	MP	100K	0Ω	330Ω	INF

ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED.
▲ MEASURED IN "AM" POSITION.
* MEASURED FROM PIN OF POWER PLUG

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerances on component values makes possible a variation of ±5% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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CIRCUIT-REACT
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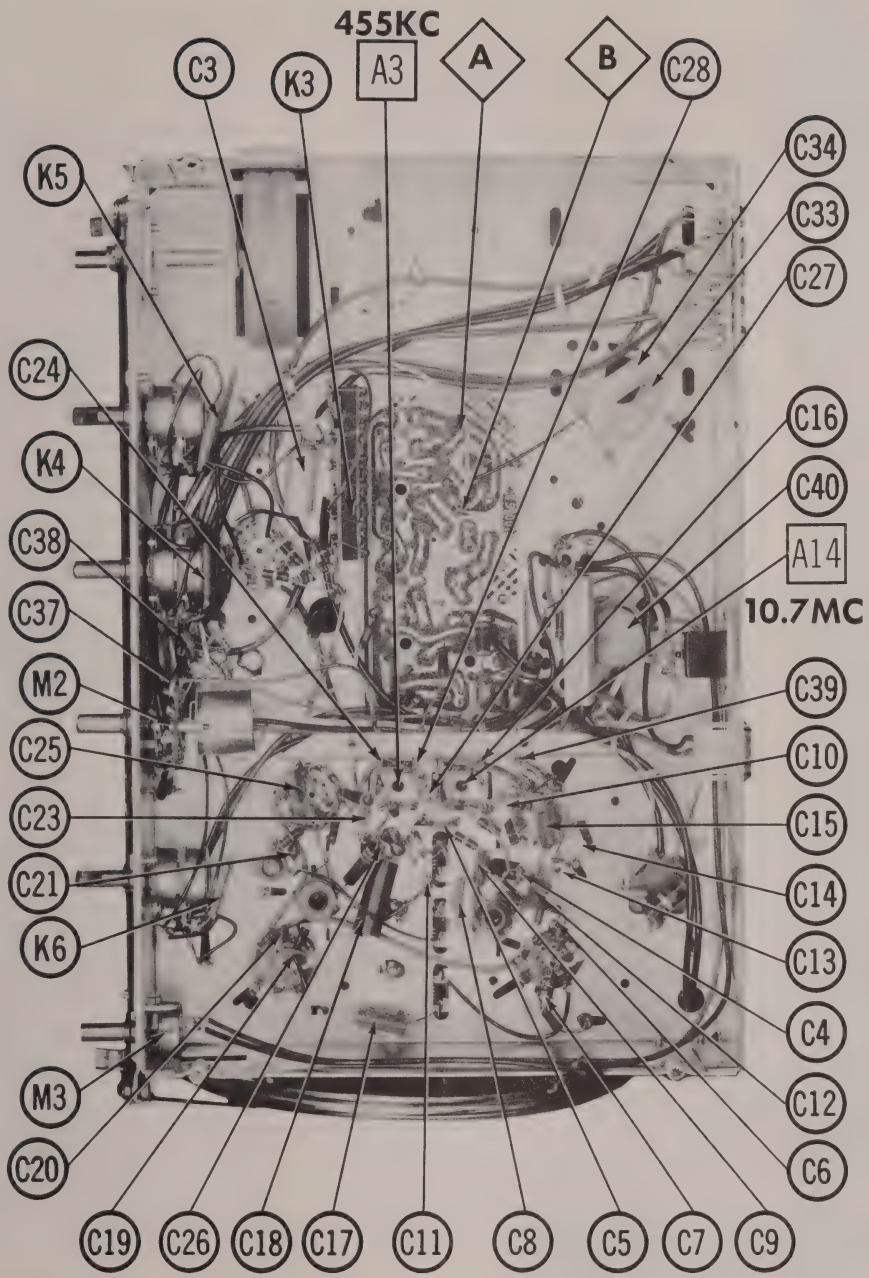
MAGNAVOX CHASSIS 57-01-42, 57-03-00



CHASSIS BOTTOM VIEW - ALIGNMENT, CAPACITOR & MISC. IDENT.

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:
A1 thru A4, A11 thru A16 ... GENERAL CEMENT #5097, 8727, WALSCO #2515
A5, A6, A7, A18, A19 ..... GENERAL CEMENT #5004, 5008, 5009, WALSCO #2520
A8, A9, A10, A17, A20 .... GENERAL CEMENT #8721, 8722, WALSCO #2519

AM ALIGNMENT - SELECTOR IN AM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .01mfd to pin 7 (grid) of AM Converter Low side to chassis.	455KC (400∿ Mod.)	(AM) Tuning gang fully open.	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.	High side thru 10mmf to AM antenna terminal. Low side to chassis.	1400KC	1400KC	"	A5, A6, A7	"
3.	"	600KC	600KC	"	A8, A9	Adjust for maximum output. Repeat steps 2 and 3.
4.	"	1400KC (10KC Mod.)	1400KC	"	A10	Adjust for MINIMUM output.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM - SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
5.	High side thru .01mfd and 1000Ω in series to pin 5 (plate) of FM RF Amplifier. Low side to chassis.	10.7MC (Unmod.)	(FM) Point of non-interference	DC probe to point Ⓐ. Common to chassis.	A11, A12, A13, A14, A15	Adjust for maximum deflection.
6.	"	"	"	DC probe to point Ⓑ. Common to chassis.	A16	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE - SELECTOR IN FM POSITION

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
5.	High side thru .01mfd and 1000Ω in series to pin 5 (plate) of FM RF Amplifier. Low side to chassis.	10.7MC (450KC swp)	(FM) Point of non-interference.	Vert. Amp. to point Ⓐ. Low side to chassis.	A11, A12, A13, A14, A15	Disconnect Stabilizing Capacitor C2. Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown. Reconnect C2.
6.	"	"	"	Vert. Amp. to point Ⓑ. Low side to chassis.	A16	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A11 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT - SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	Across FM antenna terminals with 120Ω in each lead.	107MC (Unmod.)	(FM) 107MC	DC probe to point Ⓐ. Common to chassis.	A17, A18, A19	Adjust for maximum deflection.
8.	"	89MC	89MC	"	A20	Adjust for maximum deflection. Repeat steps 7 and 8.

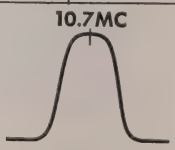


FIG. 1

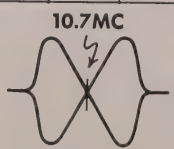


FIG. 2

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE
V1	FM RF Amplifier	6CY5
V2	FM Mixer - Osc.	6EA8 (6U8) *
V3	AM RF Amplifier	6BA6
V4	AM Converter	6BE6
V5	FM-AM IF Amp.	6BA6

ITEM No.	USE	TYPE
V6	FM IF Amp. - AM Det. - AVC	6BA6
V7	Ratio Detector	6AL5
V8	Channel 1 AF Amp. - Channel 2 AF Amp.	12AX7

* Alternate

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA MAGNAVOX PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲ 30	450	270021-58	AFH2-54	B0430	FP237	TMD-52	TVL-2759	
B	▲ 30	450							
C2	4	50	270021-71	PWE50005	NLW4-50	TT50X4	ML4-50	TE-1302.1	
C3A	25	25	270043-1	PRS2075	BBR25-25	TCD26	TD-25-25	TVA-1205	
B	25	25			BBR25-25		TD-25-25	TVA-1205	

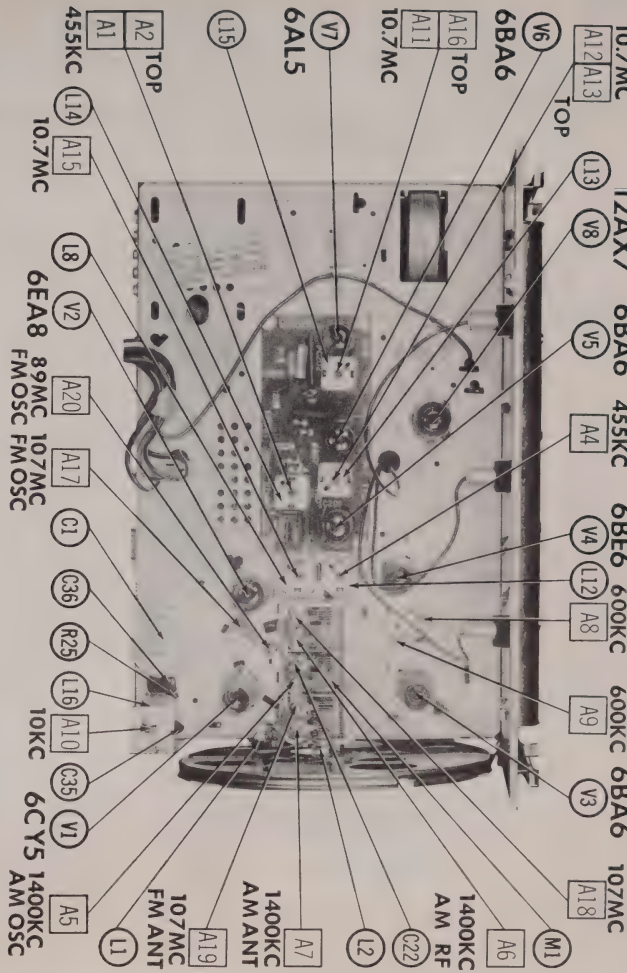
FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C4	1000		EF-001	MFT-1000		CCF-102	CT280A	
C5	5000		BPD-005	DD-502	BYA10D50	CCD-502	B-250	5HK-D50
C6	1000		EF-001	MFT-1000		CCF-102	CT280A	
C7	1000		EF-001	MFT-1000		CCF-102	CT280A	
C8	100 10%		1469-0001	TCZ-100	22R5T1	CM-19B-101K	MCB235	MS-310
C9	100 10%		1469-0001	TCZ-100	22R5T1	CM-19B-101K	MCB235	MS-310
C10	.01 400V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S1
C11	2.2 10%		NPO-SI 2.2	TCZ-2R2	L10V22C	CCTO-2R2	CNO-522	10TCC-V22
C12	220 10%		1469-00022	TCZ-220	22R5T22	CM-19B-221K	CNO-322	MS-322
C13	2.5-12	#250188-9				*		
C14	5 N470 5%	#250088-138				*		
C15	220 10%		1469-00022	TCZ-220	22R5T22	CM-19B-221K	CNO-322	MS-322
C16	1000		EF-001	MFT-1000		CCF-102	CT280A	
C17	470		1469-00047	DD-471	5R5T47	CM-19B-471M	MCJ244	1FM-347
C18	.1 100V		P288N-1	DF-104	CUB2P1	1DP-2-104	GEM-201	2TM-P1
C19	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C20	12		DI-12	DD-120	L10Q12	CCD-120	GP412	10TS-Q12
C21	47		DI-47	DD-470	L10Q47	CCD-470	GP447	10TS-Q47
C22	8 N2200 5%	#250088-180				*		
C23	5000		BPD-005	DD-502		CCD-502	B-250	5HK-D50
C24	1000		EF-001	MFT-1000		CCF-102	CT280A	
C25	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C26	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C27	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C28	1000		EF-001	MFT-1000		CCF-102	CT280A	
C29	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C30	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C31	3300		BPD-0033	DD-332	BYA10D33	CCD-332	B-233	5HK-D33
C32	1500		BPD-0015	DD-152	BYA10D15	CCD-152	B-215	5HK-D15
C33	.022 200V		P288N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	2TM-S22
C34	.022 200V		P288N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	2TM-S22
C35	1000 5%		1469-001		1R5D1	CM-19B-102J	MCJ454	MS-21
C36	1000 5%		1469-001		1R5D1	CM-19B-102J	MCJ454	MS-21
C37	2000	(5000) †	BPD-002	DD-202	BYA10D2	CCD-102	B-220	5HK-D20
C38	2000	(5000) †	BPD-002	DD-202	BYA10D2	CCD-102	B-220	5HK-D20
C39	1000		EF-001	MFT-1000		CCF-102	CT280A	
C40	10000 1400V		DAC-27	DD16-103	HVE16S1	16DP-3-103	2HV-110	BL-S10
C41	10000 1400V		DAC-27	DD16-103	HVE16S1	16DP-3-103	2HV-110	BL-S10

† Alternate Value. # Magnavox Part Number.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CHASSIS—TOP VIEW



MAGNAVOX CHASSIS
57-01-42, 57-03-00

FOLDER 7

PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	MAGNAVOX PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	3.3meg *		220151-10	BT-180			FA36DT155	Loudness, Channel 2
B	3.3meg *			STR-180			RU36DT155	Loudness, Channel 1
C	Shaft			Not Req.			CS3500	
R2A	1meg		220151-11	B-70	AD47-1meg-Z		FA16A	Bass, Channel 1
B	1meg			SR-70	Not Req.		RU16A	Bass, Channel 2
C	Shaft			Not Req.	FS-3		CS3500	
R3A	1meg		220151-11	B-70	AD47-1meg-Z		FA16A	Treble, Channel 1
B	1meg			SR-70	Not Req.		RU16A	Treble, Channel 2
C	Shaft			Not Req.	FS-3		CS3500	

* Taps @ 350K, 1.5meg.

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R4	22Ω	
R5	68K	
R6	68Ω	
R7	100K	
R8	1000Ω 1W	
R9	1000Ω	
R10	10K	
R11	220Ω	
R12	1meg	
R13	820Ω	
R14	3300Ω 1W	
R15	100Ω	

ITEM No.	RATING	REMARKS
R16	22K	
R17	1000Ω	
R18	8200Ω 1W	
R19	2.2meg	
R20	1000Ω	
R21	68Ω	
R22	220K	
R23	47K	
R24	47K	
R25	220K	
R26	1meg	
R27	1.5meg	

ITEM No.	RATING	REMARKS
R28	100K	
R29	3300Ω	
R30	1meg	
R31	1.5meg	
R32	100K	
R33	3300Ω	
R34	470Ω 1W	
R35	10K 2W	
R36	10000Ω 2W	
R37	25000Ω 2W	
R38	2.2meg	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	MAGNAVOX PART No.	REPLACEMENT DATA
K1	Limiter Cathode	1000mmf, 5000mmf, 5000mmf, 100Ω, 1000Ω	B250330-1	
K2	Ratio Detector Network	120mmf, 330mmf, 330mmf, 120Ω, 1000Ω, 1500Ω, 8200Ω, 8200Ω, 68K	B250254-2	Centralab PC-354
K3	Phono Input Comp.	100mmf, 100mmf, 470mmf, 2200mmf, 1000mmf, 1000mmf, 47K, 47K, 47K, 330K, 330K, 330K, 1meg	B250315-1	
K4	Loudness Comp.	47mmf, 47mmf, 1000mmf, 1000mmf, 3300mmf, 3300mmf, 68K, 68K, 470K, 470K	B250316-1	
K5	Treble Comp.	100mmf, 100mmf, 1000mmf, 1000mmf, 10000mmf, 10000mmf, 330K, 330K	B250318-1	
K6	Bass Comp.	2000mmf, 2000mmf, 3300mmf, 3300mmf, 47K, 47K	B250317-1	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		MAGNAVOX PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	FM Ant. Trans.	360491-4				
L2	FM Ant. Coil	360750-1				
L3	RF Choke	360522-9	BC-563	4606		2uh
L4	FM RF Coil	360751-1				
L5	FM Osc. Coil	360628-1				
L6	Fil. Choke	360522-9	BC-563	4606		2uh
L7	Fil. Choke	360522-9	BC-563	4606		2uh
L8	1st FM IF Trans.	360626-1	FM-254	1463		
L9	Loopstick	360746-2	BC-419			
L10	AM RF Coil	360753-1	BC-388	70-RF		
L11	AM Osc. Coil	360752-1	BC-393	70-OSC		
L12	1st AM IF Trans.	360611-1	BC-352	12-C1	RF-1	
L13	2nd FM IF Trans.	360747-1		1463-PC		
L14	2nd AM IF Trans.	360781-1	BC-329	13-PC6	RF-4 *	
L15	Ratio Det.	360748-1		1465-PC		
L16	10KC Filter	360621-1				
L17	Fil. Choke	360522-9	BC-563	4606		2uh

* Connect two 100mmf caps externally.

MISCELLANEOUS

ITEM No.	PART NAME	MAGNAVOX PART No.	NOTES
M1	Tuning Cap.	260147-1	6 Gang, AM Sections: Ant. 28-322mmf, RF 15-280mmf, Osc. 22-151mmf
M2	Switch	160306-5	Band (Rotary Wafer Type) Ch. 57-03-00
	Switch	160310-1	Band (Rotary Wafer Type) Ch. 57-01-42
M3	Switch		Phono Power, Off-On

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Dial Glass	635321-1	
Dial Pointer	150534-1	

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No: 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

PHOTOFACT® Folder

NORELCO MODEL
AG1024/54

NORELCO MODEL
AG1024/54

NORELCO MODEL
AG1024/54

GENERAL INFORMATION

The Norelco Model AG1024/54 record changer is a four-speed mechanism designed to play, in automatic sequence, a stack of 7-, 10-, or 12-inch records. Up to ten records may be automatically intermixed providing they are of the same speed. The changer will shut off automatically after playing the last record.

The records to be played are separated by the movement of a cam in the center spindle. This cam separates records with a 1/4-inch center hole. It also actuates the knives and shelves of the center post used for playing 45-rpm records with a 1 1/2-inch center hole.

The tripping method used is the velocity type. In this method, the clutch engages the feeler bracket assembly which starts the worm wheel. The worm wheel then engages the turntable worm and starts the mechanism into cycle. If the record being played causes the pickup arm to move inward at a constant rate without acceleration, a point will be reached at which a constant-diameter trip is effected by the clutch assembly.

This changer will operate on 117 volts, 60 cycles AC only.

Manufactured By:

North American Philips Company
High Fidelity Products Division
230 Duffy Avenue
Hicksville, Long Island, New York

SET 505 FOLDER 8

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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CQ435

DATE 11—60 SET 505 FOLDER 8

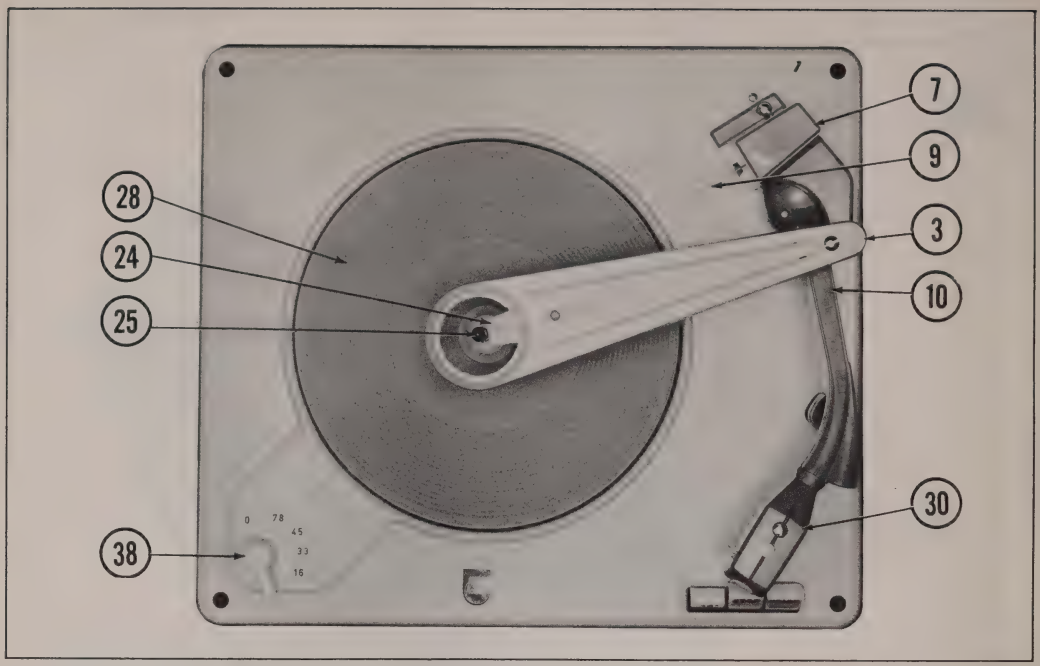

FIG. 1 TOP VIEW OF MECHANISM

AUTOMATIC OPERATING INSTRUCTIONS

Loading

1. Pull the overarm straight up until it clears the spindle. Rotate the overarm away from the center of the turntable.

2. If it is not already in place, insert the record spindle into its slot and rotate until it drops into position. (The record spindle cam should be facing the right rear of the changer).

3. Place the records on the record spindle and lower them onto the cam. Hold the records level and rotate the overarm over the record spindle. Push the overarm slide and lower the overarm onto the records. Make sure the slot in the overarm slide fits around the record spindle.

Starting

Before starting the changer, make sure the stylus and Speed Control knob is in the position corresponding to the type of record to be played.

To start the changer, depress the Start-Reject key, holding it down until the pickup arm starts to rise. The changer will then operate automatically until the last record has been played. At this time, the pickup arm will return to its rest post and the motor will be switched off.

Rejecting

To reject a record at any time the changer is operating, depress the Start-Reject key holding it down until the pickup arm starts to rise off the record.

Stopping

The changer may be stopped at any time while a record is being played by first depressing the Start-Reject key until the pickup arm starts to rise off the record, and then depressing the Stop key.

NOTE: When the changer is not to be used for a long time, turn the Speed Selector knob to the "O" position. (fully counterclockwise). This will remove the pressure on the idler wheel from the motor shaft and the turntable, preventing flat spots from forming on the idler wheel.

Unloading

Lift the overarm clear of the record spindle and rotate it away from the center of the turntable. Remove the record spindle, then pick up the stack of records from the turntable.

Using The 45-rpm Adapter

The playing of 45-rpm records, with a large

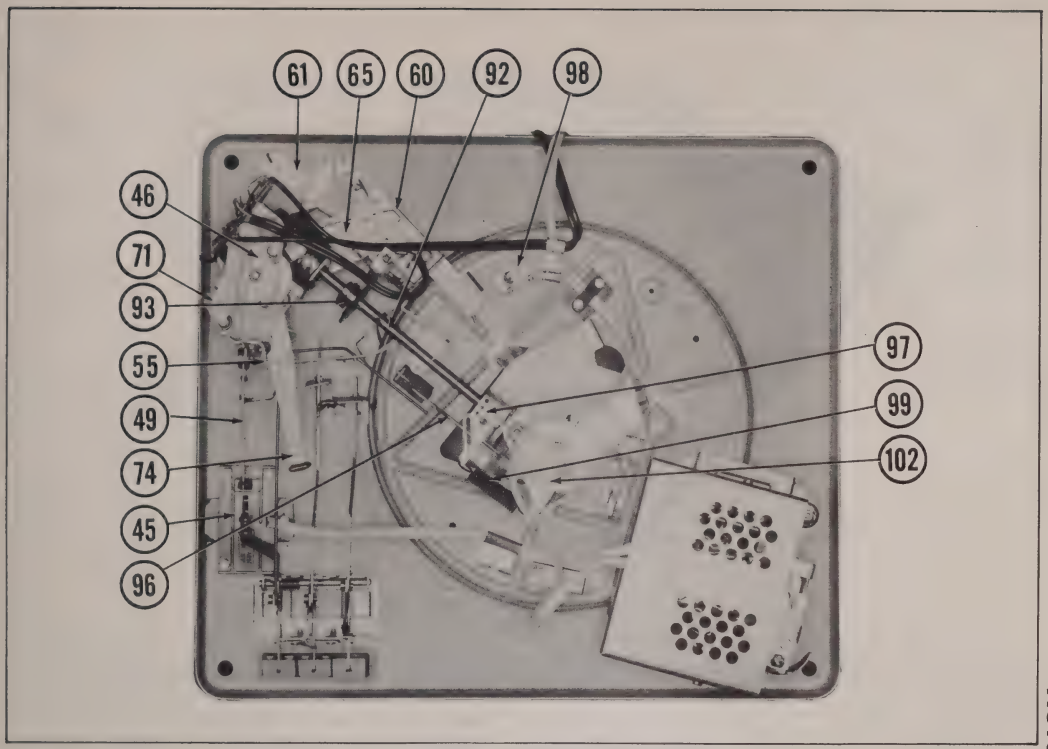

FIG.2 BOTTOM VIEW OF MECHANISM

center hole, requires the use of a 45-rpm adapter. The 45-rpm adapter is placed over the record spindle and rotated until it lowers into position.

To Play A Single Record Automatically

Follow instructions under Automatic Operating Instructions.

MANUAL OPERATING INSTRUCTIONS

To Play A Single Record Manually

1. Lift overarm clear of record spindle and rotate away from the center of the turntable.
2. Remove record spindle and place record to be played on hollow spindle. (For 45-rpm records with large center hole, use small plastic 45-rpm adapter over hollow spindle).
3. Turn Speed Selector knob to speed of record to be played.
4. Set the cartridge for playing either microgroove or standard groove records.
5. Depress the Stop key. (If this key is not depressed the record will repeat).
6. Lift the pickup arm and place the stylus on the lead-in groove of the record. (Lifting the pickup arm will start the turntable when the stop key is depressed).

CHANGE CYCLE

Observe the change cycle by manually rotating the turntable. The following action can then be readily observed, and the function of each part more easily understood. In this explanation of the change cycle,

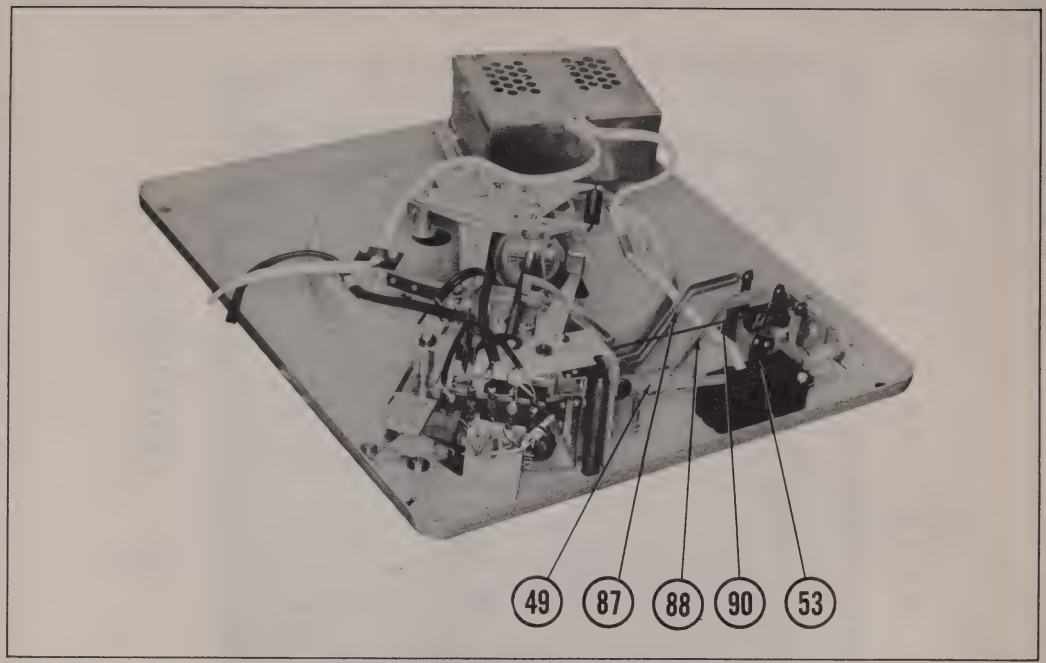

FIG.3 BOTTOM VIEW OF MECHANISM

the mechanism is assumed to have stopped automatically with the pickup arm resting on the rest post.

To start the unit into automatic cycling, first, turn the Speed Selector knob (38) to the desired speed. The movement of this control from the "O" position to one of the speed positions engages the idler wheel (127) with the motor service pulley (134) and the outer rim of the turntable (32). When the Start-Reject key (77) is depressed, the triangular contact, (53) on the end of the start lever (85) slides into the On-Off switch, activating the On-Off switch (45) and starting the motor (121). Depressing the Start-Reject key (77) causes the starter bracket spring (90) to push the feeler bracket (96) against the switch tooth (116) which starts the change cycle.

The turntable (32) is driven by the idler wheel (127) which in turn is driven by the motor service pulley (134). The pulley (134) has 4 speed selection diameters (16-2/3, 33-1/3, 45, and 78 rpm) which are chosen by the Speed Selector knob (38). A locking action is provided at the different speed settings by means of the switch bracket assembly (129) and the stretching pin (130).

The cam disc (117) controls the movement of the record release mechanism on the record spindle (25). Roller (119), which rides on the cam disc (117) is connected to the stop lever (97). The stack of records are supported by the spindle cam (26) and the overarm (3). When the release mechanism is moved, the stack of records, except for the bottom record, shifts with the mechanism. The bottom record remains on the fixed portion of the spindle until the spindle cam (26) moves into the spindle. At this time, the bottom record drops onto the turntable and the remaining records drop onto the fixed portion of the spindle. This places a new bottom record in position for the next change cycle.

The control roller (57) is connected to the worm wheel (114) by the control shaft (92). When the control roller (57) turns, the lifting bracket assembly (56) is lifted until it engages the pivot spindle (73). At the same time, the lifting bracket assembly (56) raises the pickup arm (10) which then moves inward in a horizontal plane. The lip of the velocity trip pushes the friction plate (70) and starts the change cycle into operation. The inward movement of the pickup arm is limited by the lifting bracket (64) while the outward movement is limited by the lip on the stop bracket (105). When the control roller (57) reaches the end of its path, the stop pin and pickup arm (10) are pushed in opposite directions. The position of the indexing mechanism which controls the distance the pickup arm travels will be described later. When this position is established, the lifting bracket (56) and the lifting pin descend until the stylus rests on the record. At this time, the cam disc (117) returns to its rest position.

During the time that the record is playing, the pickup arm (10) and the pivot spindle (73) are turned by friction spring (75). At the end of the record, the clutch (74) strikes the stop lip of the lifting bracket (64) which causes the feeler bracket (96) to actuate the velocity trip and start the change cycle.

Stops are provided for the correct indexing of 7-, 10- and 12-inch records. The detent spring (65) which is mounted on the stop plate is connected to the

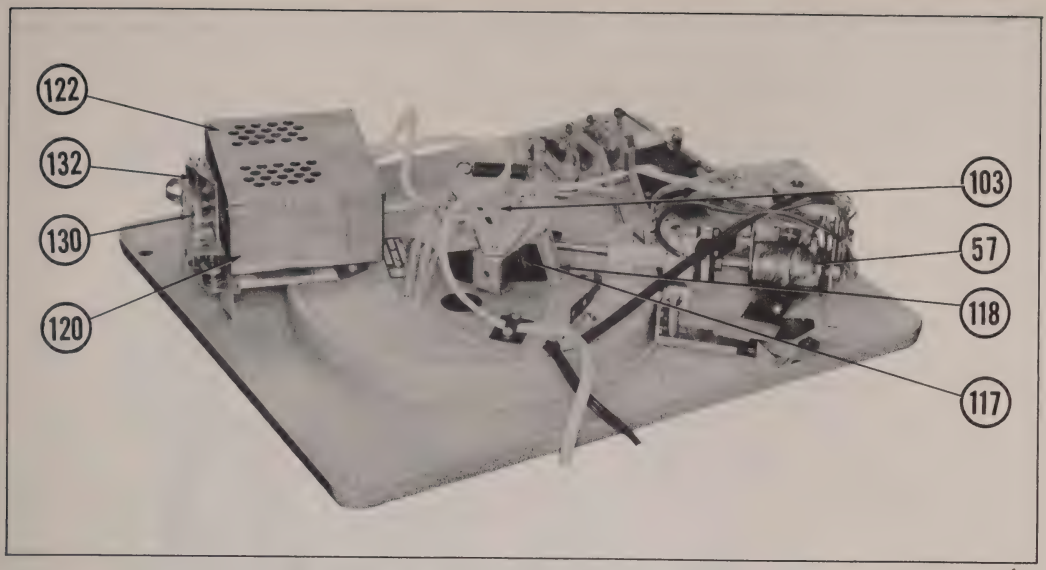

FIG.4 BOTTOM VIEW OF MECHANISM

lifting bracket (64). With the lifting bracket (64) in the lifted position, and moving inward, the stop plate will strike the stop cam on the stop bracket assembly (105) with one of its stop surfaces. The different stop surfaces index the pickup arm for different diameter records. Depending on the position of the Diameter Selector key (set for 7-, 10- or 12-inch record), the bracket (60) will turn the detent spring (65) so the correct detent surface of the stop plate will strike against the stop bracket (105).

The stop plate on the detent spring (65), lifting bracket (64), and the pickup arm movement are limited by the stop bracket (105). The friction plate (70) will be moved by its stop pin until it reaches the control roller (57).

The stop bracket (105) is adjusted by the feeler bracket (9) which determines how far the indexing bracket will be turned. This depends on the diameter of the record.

The adjustment of the stop bracket (105) is not necessary when a 7-inch record drops onto the turntable since the edge of this size record does not touch the feeler bracket (9). This allows the stop bracket (105) to go into the first stop position. When a 10-inch record drops onto the turntable, the record pushes the feeler bracket (9) half-way down which causes the stop bracket (105) to go into the middle stop position. When a 12-inch record drops onto the turntable, the record pushes the feeler bracket (9) all the way down causing the stop bracket (105) to go into the third stop position.

To prevent incorrect indexing when a 7-inch record follows a 10- or 12-inch record, the stop bracket (105) is returned to the 7-inch position by the control shaft (92) moving the bracket (105) back.

The pickup arm (10) moves on the pivot spindle (73) which is held in the pivot bracket (19). The lifting pin extends through the slotted hole in the pivot bracket (19) and is held to one side of the hole by spring (20). The lifting pin controls the deviation of the pickup arm (10) in the horizontal plane by pushing against the leaf spring (11) which is attached to the globular part of the pickup arm. This spring (11) may be adjusted down by turning adjustment screw (12). The point at which contact is made between the lifting pin and the spring (11) can be shifted with respect to the pickup arm (10). When this is done, the angle between the pickup arm (10) and the baseplate (23) can be adjusted for the correct position of the lifting pin.

AUTOMATIC SHUTOFF

When the last record drops onto the turntable this allows the slider (24) in the overarm (3) to rest on the record spindle cam (26). When the change cycle starts, the cam (26) moves into the record spindle (25) allowing the overarm shaft (4) to drop in front of the stop spring (71). This causes the pickup arm assembly to descend and the stop bracket (105) hits the stop lever (49) switching the motor off.

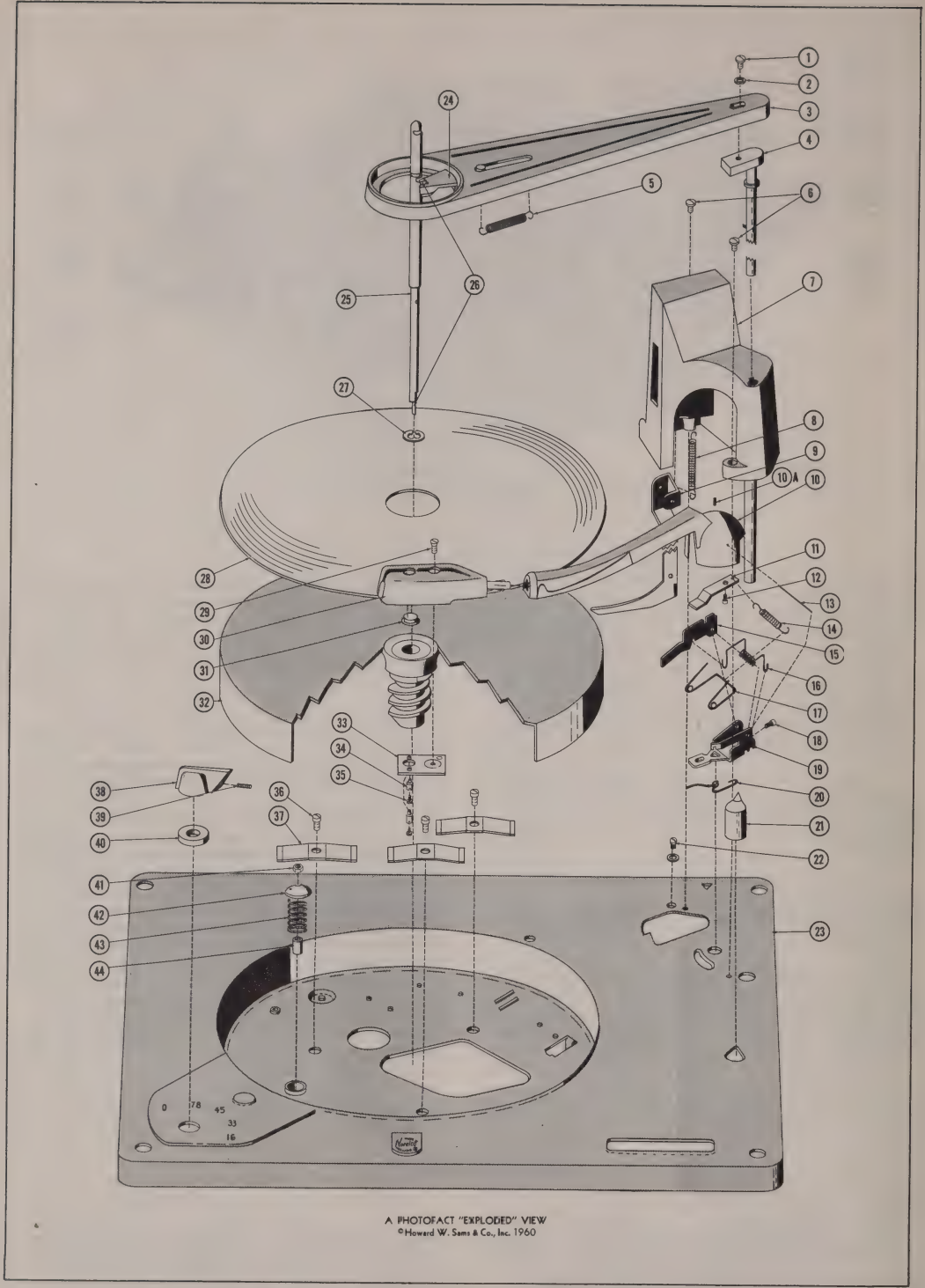

FIG. 5A EXPLODED VIEW OF PARTS ABOVE BASE PLATE

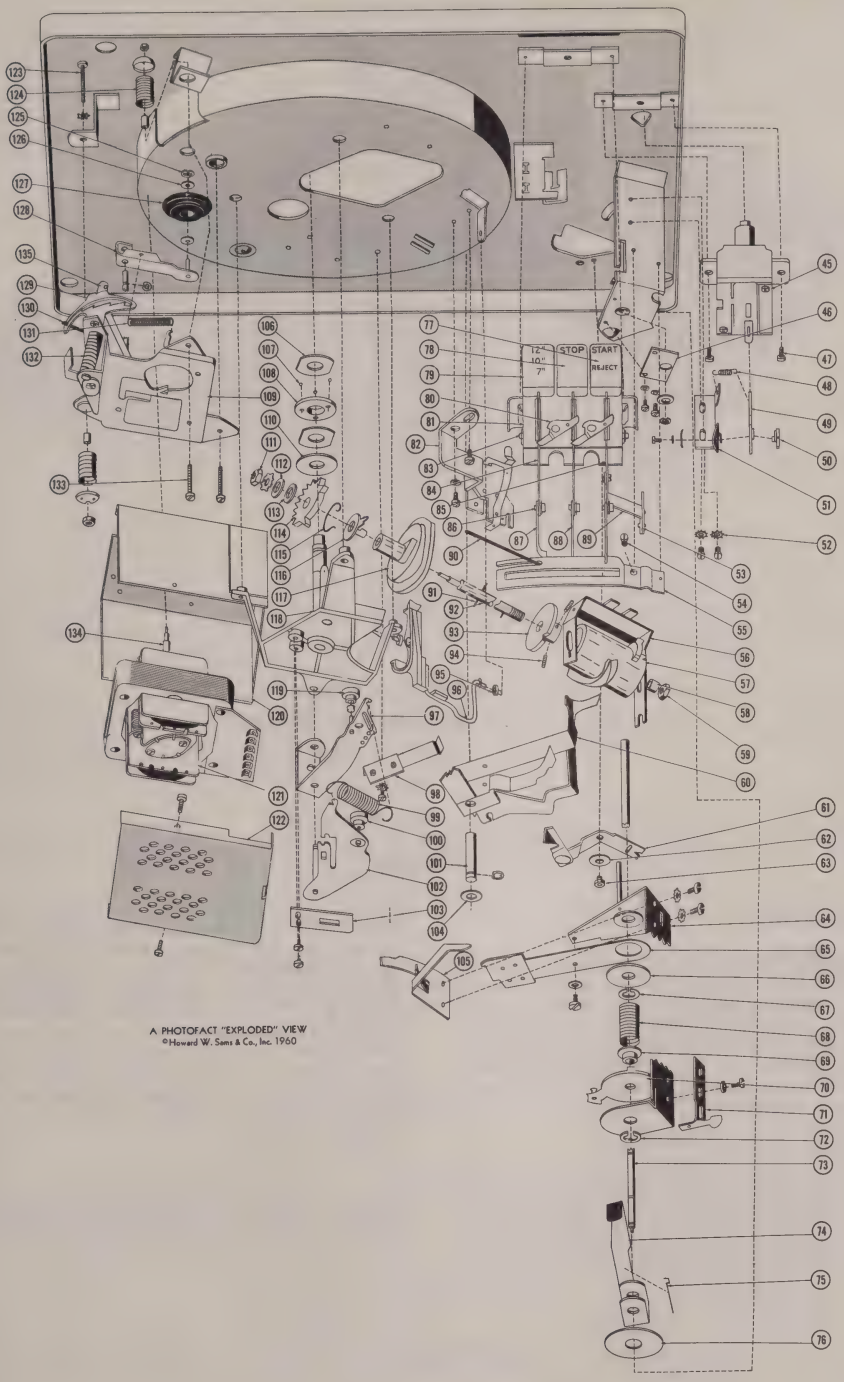

FIG.5B EXPLODED VIEW OF PARTS BELOW BASE PLATE

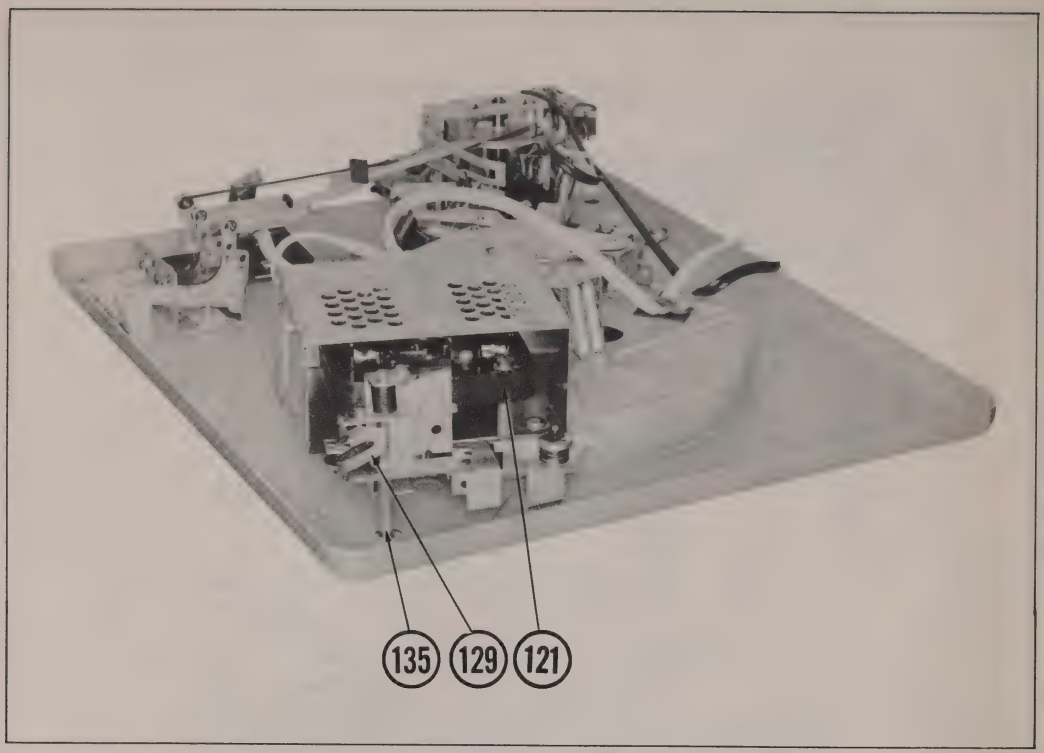

FIG.6 BOTTOM VIEW OF MECHANISM

ADJUSTMENTS

Pickup Arm Indexing

The pickup arm is factory adjusted to find the lead-in grooves of the record during automatic operation. To readjust the pickup arm, insert a screwdriver in the triangular slot at the right rear corner of the changer. Clockwise rotation of the screwdriver will move the pickup arm closer to the record center. Counterclockwise rotation will make the pickup arm move outward from the record center.

Pivot Bracket

The pivot bracket (19) is fixed to the pivot spindle (73) by the adjusting screw (18). The adjusting screw (12) is turned so that the leaf spring (11) is lying against the pickup arm (10). The change mechanism is manually put into operation and the lifting pin is brought into its highest position. The pivot bracket (19) is adjusted so the distance between the lower side of the shell and the cap (21) on the line switch is between 0.0394 and 0.0591 inches. After this is done, set screw (10A) is adjusted so that the stylus point is 1.043 inches above the upper side of the turntable. The adjusting lip at the pivot bracket (19) should be bent so that when the lifting pin is all the way down, the point of the shell floats between the grooves on the turntable mat.

When a record is placed on the turntable and the stylus is placed on the record, the pickup arm should not touch the adjusting lip at the pivot bracket (19).

LUBRICATION

All moving parts should be lubricated with "Lubriplate" or equivalent.

TROUBLE CHART

Symptom	Cause	Remedy
Turntable does not turn when Start-Reject key is depressed.	1. No current at motor.	1. Make sure current is reaching the AC leads of the changer.
	2. Defective On-Off switch.	2. Replace On-Off switch.
	3. Defective motor.	3. Check all wiring and soldered terminals in the changer. Remove the turntable and allow the motor to operate without a load. If current is reaching the motor but the shaft does not rotate, the motor is defective and should be replaced.
Turntable does not turn although motor is running.	1. Tension spring (131) broken.	1. Replace tension spring (131).
Wow	1. Oil or grease on rubber surface of idler wheel (127) or on the turntable rim.	1. Clean the rubber surface of idler wheel (127) and turntable rim with alcohol.
	2. Defective idler wheel (127).	2. Replace idler wheel (127).
	3. Defective turntable rim.	3. Replace turntable (32).
Turntable stalls during change cycle.	1. Low line voltage.	1. Check the line voltage. It should be at least 105 volts.
	2. Dirty or defective idler wheel (127).	2. Clean or replace idler wheel (127).
Erratic Speed change.	1. Stretching pin (130) bent or broken.	1. Replace stretching pin (130).
	2. Pressure spring (132) broken.	2. Replace pressure spring (132).
Will not change speeds.	1. Switch bracket assembly (129) inoperative.	1. Replace switch bracket assembly (129).
Pickup arm does not index properly.	1. Bracket (60) bent.	1. Adjust bracket (60).
	2. Feeler arm (9) too tight.	2. Check feeler arm (9) alignment.
Faulty tracking.	1. Dust and dirt on stylus.	1. Clean the stylus.
	2. Changer not level.	2. Level the changer with a torpedo level.
	3. Wrong stylus for record.	3. Change the stylus.
	4. Defective stylus.	4. Replace the stylus.
	5. Cartridge weight too light.	5. Change adapter plate (33).
Record does not drop.	1. Defective spindle.	1. Replace spindle.
Last record repeats.	1. Overarm shaft (4) binding. (does not drop below spindle cam (26).)	1. Overarm shaft (4) bent. Dirt inside overarm shaft housing in tower (7).
Does not shut off after last record.	1. Velocity trip mechanism binding.	1. Adjust velocity trip mechanism.

MECHANICAL PARTS LIST

Ref. No.	Part No.	Description
1		Overarm Shaft Mounting Screw
2		Mounting Washer
3	AE60563	Overarm Assembly
4		Overarm Shaft
5	AE00662	Overarm Slide Tension Spring.
6		Tower Mounting Screws
7	AE60567	Tower
8	4995444	Tension Spring
9	AE60567	Feeler Bracket
10	AE15433	Pickup Arm Assembly
10A		Set Screw
11		Leaf Spring
12		Screw
13		Pivot
14	AE01058	Tension Spring
15		Arm Bracket
16		Spring
17		Spring
18		Screw
19		Pivot Bracket
20	4995441	Spring
21	P551140/723	Cap
22		Mounting Screw
23		Base Plate
24	AE60563	Overarm Slide
25	AE15419	Spindle
26		Spindle Cam
27		"C" Washer
28		Turntable Mat
29		Adapter Plate Mounting Screw
30		Pickup Arm Head
31		Plug
32	AE15298	Turntable
33		Adapter Plate
34		Stud
35		Screw
36		Mounting Screw
37	4995496	Leaf Spring
38	P551009.1/159	Speed Selector Knob
39		Set Screw
40		Felt Washer
41		Nut
42	4993531	Spring Washer
43	4993530	Pressure Spring
44		Spacer
45		On-Off Switch
46		Plate
47		Screw
48	4989740	Tension Spring
49		Stop Lever
50	AE00263	Adjusting Nut
51	AE00423	Bracket
52		Lock Washer
53	AE60562	Triangular Contact
54		Screw
55		Bracket
56	4994600	Lifting Bracket Assembly
57	4995479	Control Roller
58	4995481	Bushing
59		Nut
60	AE60525.1	Bracket
61	AE60565	Stop Bracket
62		Washer
63	AE00258	Collar Nut
64	4994597	Lifting Bracket
65	AE60522	Detent Spring
66	P551581/304	Plastic Washer
67		"C" Washer
68	4995461	Pressure Spring
69	4994599	Friction Plate Assembly
70		Friction Plate
71	AE15007	Stop Spring Assembly
72		"C" Washer
73		Pivot Spindle
74	AE60508	Clutch Assembly
75	4995469	Spring
76	P551581/304	Plastic Washer
77	AE60560	Start Reject Key
78	4994595	Stop Key
79	AE60561	Diameter Selector Key
80		Locking Lever
81		Locking Lever Bracket
82	AE15309	Muting Switch
83		Pushbutton Spindle
84	AE60561	Selector Lever
85	AE60560	Start Lever
86		Mounting Screw
87	4995426	Bracket
88	AE00036	Stop Bracket
89	AE60562	Line Switch Bracket Assembly
90		Starter Bracket Spring
91	AE60526	Pin
92	AE60526	Control Shaft
93	AE15309	Disc
94		Set Screw
95	P551560/34	Bushing
96	4994678	Feeler Bracket Assembly
97	AE60564	Stop Lever
98	AE60501	Stop Spring
99	4995494	Tension Spring
100	P551594/34	Roller
101	AE00660	Screw Pin
102	4994689	Plate
103	4995496	Plate
104	P551581/304	Washer
105	AE00424	Stop Bracket
106	4995498	Washer
107	8920503	Ball Bearing
108	P551559/04	Bearing Race
109		Motor Mounting Plate
110	4995497	Washer
111		Nut
112		Washer
113		Spring Washer
114	P551114/333	Worm Wheel
115	4995484	Spring
116	4995485	Switch Tooth
117	AE00650	Cam Disc
118	4994670	Tripod
119		Roller
120	AEOR47	Motor Shield Case
121	JW41502	Motor 60 C/S
122	AEOR48	Motor Shield Case Cover
123		Screw
124	4995268	Pressure Spring
125		"C" Washer
126	P551593/16	Washer
127	AE15144	Idler Wheel
128	AE60519	Idler Wheel Bracket
129	AE60518	Switch Bracket Assembly
130	B074AF/2X24	Stretching Pin
131	AE00162	Tension Spring
132	4989774	Pressure Spring
133*		Screw

MECHANICAL PARTS LIST (CON'T.)

Ref. No.	Part No.	Description
134 135	JW52304	Service Pulley 60 C/S Speed Change Spindle

PHOTOFACT® Folder

**PACO MODEL
SA-40W**

PACO MODEL
SA-40W

PACO MODEL
SA-40W

TRADE NAME	Paco Model SA-40W
MANUFACTURER	Paco Electronics Co., Inc., 70-31 84th Street, Glendale 27, N. Y.
TYPE SET	AC Operated 9 Tube Stereo Amplifier
POWER SUPPLY	110 – 120 Volts AC, 60 Cycles RATING 90 Watts, .83 Amp. @117 Volts AC

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1960 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

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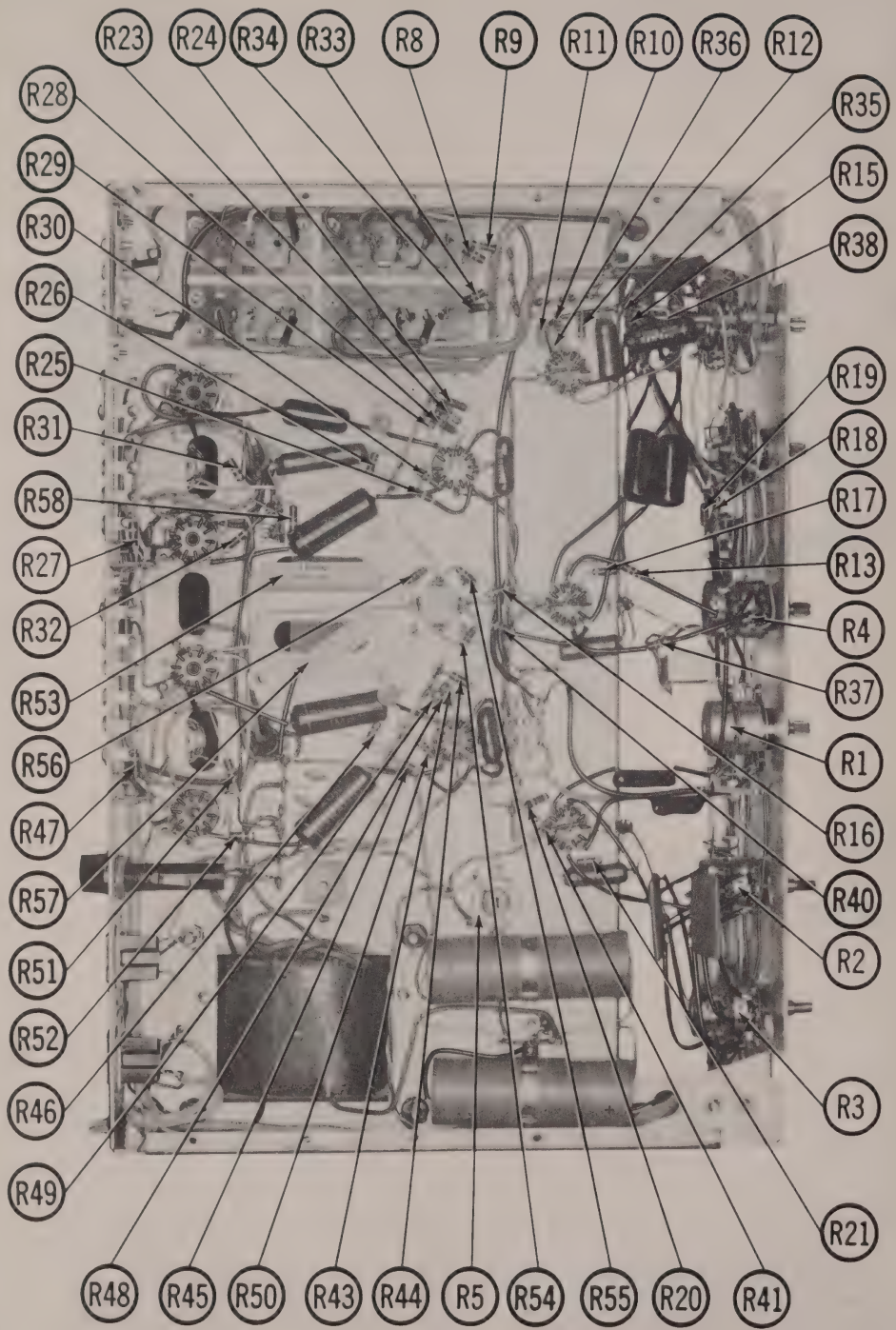
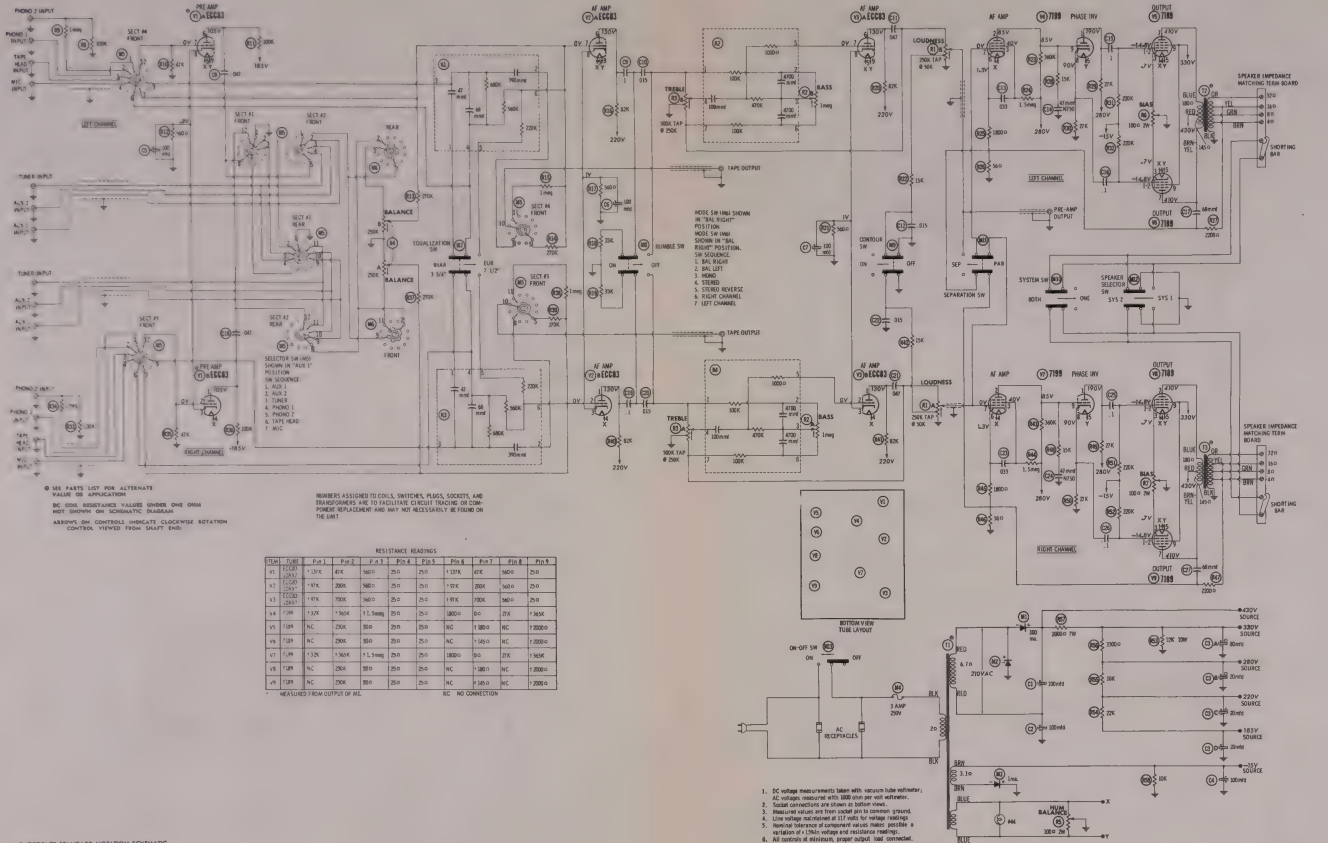


CHASSIS BOTTOM VIEW – RESISTOR IDENT.



@ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC VOLTS RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION CONTROL VIEWED FROM SHAFT END.

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

RESISTANCE READINGS

TUBE	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	ECC83 (12AX7)	1.33K	47K	560Ω	25Ω	25Ω	1.33K	47K	560Ω	25Ω
V2	ECC83 (12AX7)	47K	200K	560Ω	25Ω	25Ω	70K	200K	560Ω	25Ω
V3	ECC83 (12AX7)	47K	700K	560Ω	25Ω	25Ω	110K	700K	560Ω	25Ω
V4	7199	132K	1.36M	11.5meg	25Ω	25Ω	1800Ω	0Ω	27K	1.36M
V5	7189	NC	250K	350Ω	25Ω	25Ω	NC	1.38Ω	NC	2.200Ω
V6	7189	NC	250K	350Ω	25Ω	25Ω	NC	1.45Ω	NC	2.200Ω
V7	7199	132K	1.36M	11.5meg	25Ω	25Ω	1800Ω	0Ω	27K	1.36M
V8	7189	NC	250K	350Ω	25Ω	25Ω	NC	1.38Ω	NC	2.200Ω
V9	7189	NC	250K	350Ω	25Ω	25Ω	NC	1.45Ω	NC	2.200Ω

* MEASURED FROM OUTPUT OF AFL

NC NO CONNECTION

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ± 10% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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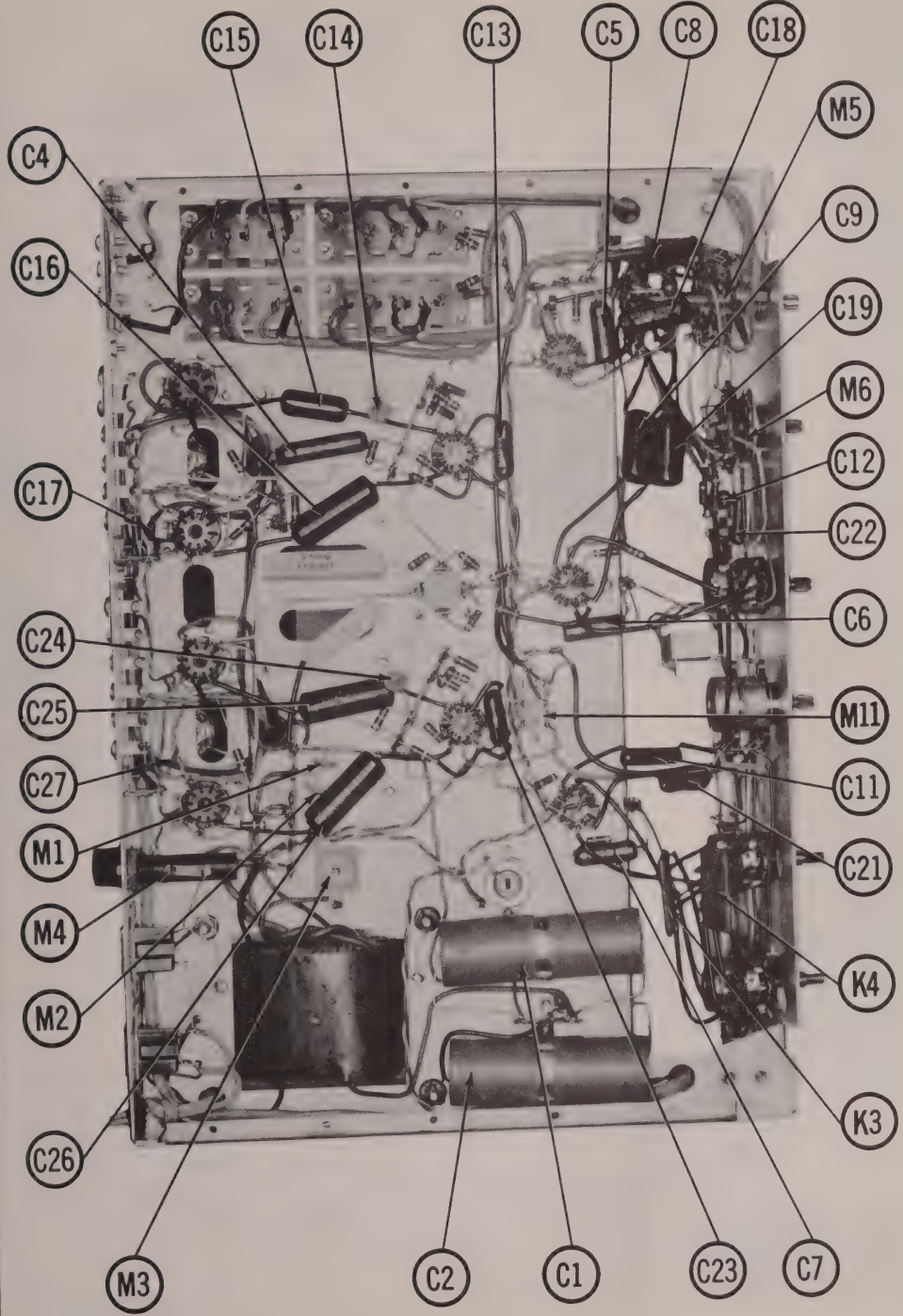
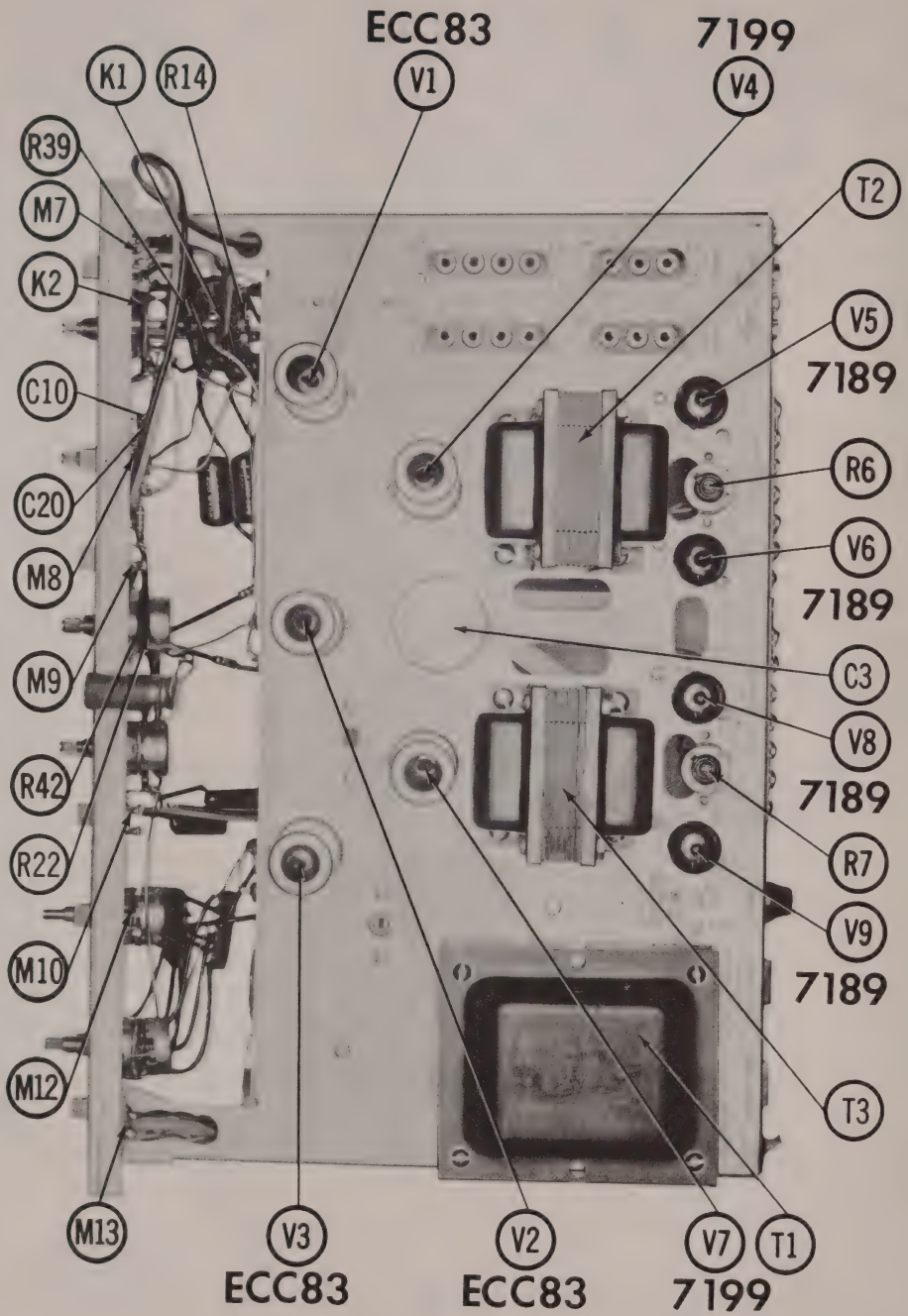
PACO MODEL SA-60W



CHASSIS BOTTOM VIEW – CAPACITOR & MISC. IDENT.



CHASSIS — TOP VIEW

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Left Channel Preamp. - Right Channel Preamp.	ECC83/12AX7(7025) *	V5	Left Channel Output	7189
V2	Left Channel AF Amp. - Right Channel AF Amp.	ECC83/12AX7	V6	Left Channel Output	7189
V3	Left Channel AF Amp. - Right Channel AF Amp.	ECC83/12AX7	V7	Right Channel AF Amp. - Right Channel Phase Inv.	7199
V4	Left Channel AF Amp. - Left Channel Phase Inv.	7199	V8	Right Channel Output	7189
			V9	Right Channel Output	7189

GENERAL ELECTRIC • RAYTHEON • SYLVANIA •

* Alternate

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	PACO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1	100	200	P16-257	PRS1595	BRI0035	TC1265	TD-100-200	TVA-1718	
C2	100	200	P16-257	PRS1595	BRI0035	TC1265	TD-100-200	TVA-1718	
C3A	▲80	300	P16-256	AFH3-36	C0270	FP376.5	TMT-34	TVL-3780	
B	■20	300		PRS1780	BR8035	TC80	TD-80-350	TVA-1716	
C	▲20	300							
D	20	300							
C4	100	12	P16-255	PRS1150	BBRI00-15	TT15X100	ML100-15	TE-1135	
C5	100	3	P16-254	XPP-3100	NLW100-6	TT6X100	ML100-6	TE-1059.5	
C6	100	3	P16-254	XPP-3100	NLW100-6	TT6X100	ML100-6	TE-1059.5	
C7	100	3	P16-254	XPP-3100	NLW100-6	TT6X100	ML100-6	TE-1059.5	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C8	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C9	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C10	.015 200V		P288N-015	DD-153	CUB6S15	4DP-1-153	GEM-4115	4TM-S15
C11	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C12	.015 200V		P288N-015	DD-153	CUB6S15	4DP-1-153	GEM-4115	4TM-S15
C13	.033 400V		P488N-033	DD-303	CUB6S33	4DP-2-333	GEM-4133	6TM-S33
C14	47 N750		N750-D1 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C15	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C16	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C17	68		BPD-000068	DD-680	L10Q68	CCD-680	GP468	10TS-Q68
C18	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C19	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C20	.015 200V		P288N-015	DD-153	CUB6S15	4DP-1-153	GEM-4115	4TM-S15
C21	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C22	.015 200V		P288N-015	DD-153	CUB6S15	4DP-1-153	GEM-4115	4TM-S15
C23	.033 400V		P488N-033	DD-303	CUB6S33	4DP-2-333	GEM-4133	6TM-S33
C24	47 N750		N750-D1 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C25	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C26	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C27	68		BPD-000068	DD-680	L10Q68	CCD-680	GP468	10TS-Q68

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	PACO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	250K 50K Tap	½	P17-231					Loudness, Right Channel
B	250K 50K Tap	½						Loudness, Left Channel

CONTROLS (cont)

ITEM No.	RATING RESISTANCE	RATING WATTS	PACO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R2A	1meg		P17-229	F1-51		† QJ-1284R	■UE4031	Bass, Right Channel
B	1meg			R2-51				Bass, Left Channel
R3A	500K		P17-230	F3-42				Treble, Right Channel
	250K Tap					‡ QJ-1285R		
B	500K			R4-42				Treble, Left Channel
	250K Tap							
R4A	250K		P17-232					Balance, Right Channel
B	250K							Balance, Left Channel
R5	100Ω	2(WW)	P17-233				FL100P	Hum Balance
R6	100Ω	2(WW)	P17-233				FL100P	Bias, Left Channel
R7	100Ω	2(WW)	P17-233				FL100P	Bias, Right Channel

† "Concentrikit" equivalent: K-6 Kit with base elements and shafts: Bil-137, P14-019 (Panel)
(Not available as a factory assembled unit) Bil-137, Ri-028 (Rear)
‡ "Concentrikit" equivalent: K-6 Kit with base elements and shafts: Bi9-133X, P14-019 (Panel)
(Not available as a factory assembled unit.) Bi9-133X, Ri-028 (Rear)
■ "STA-LOC" equivalent: FA16L, RU16L, OS625, IS937.

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R8	100K	
R9	1meg	
R10	47K	
R11	100K	
R12	560Ω	
R13	270K	
R14	270K	
R15	1meg	
R16	82K	
R17	560Ω	
R18	33K	
R19	33K	
R20	82K	
R21	560Ω	
R22	15K	
R23	360K	
R24	1.5meg	

ITEM No.	RATING	REMARKS
R25	1800Ω	
R26	56Ω	
R27	2200Ω	
R28	15K	
R29	27K	
R30	27K	
R31	220K	
R32	220K	
R33	100K	
R34	1meg	
R35	47K	
R36	100K	
R37	270K	
R38	1meg	
R39	270K	
R40	82K	
R41	82K	

ITEM No.	RATING	REMARKS
R42	15K	
R43	360K	
R44	1.5meg	
R45	1800Ω	
R46	56Ω	
R47	2200Ω	
R48	15K	
R49	27K	
R50	27K	
R51	220K	
R52	220K	
R53	12K 10W	IRC#PW10-12K
R54	22K	
R55	10K	
R56	3300Ω	
R57	2000Ω 7W	IRC#PW10-2K
R58	10K	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	PACO PART No.	REPLACEMENT DATA
K1	Equalization Comp.	47mmf, 68mmf, 390mmf, 220K, 560K, 680K	P16-259	
K2	Tone Comp.	100mmf, 4700mmf, 4700mmf, 1000Ω, 100K, 100K, 470K	P16-258	Centralab PC-190 Sprague TC-1
K3	Equalization Comp.	47mmf, 68mmf, 390mmf, 220K, 560K, 680K	P16-259	
K4	Tone Comp.	100mmf, 4700mmf, 4700mmf, 1000Ω, 100K, 100K, 470K	P16-258	Centralab PC-190 Sprague TC-1

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA: PACO PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
	PRI.	SEC. 1	SEC. 2							
T1	117V @ .83A	150V @ .440A	6.3V @ 5.6A	18-188B ①						
	SEC. 3	SEC. 4	SEC. 5							
	13V @ .001A									

① Alternate Part #P18-188

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA: PACO PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
	PRI.	SEC.							
T2	7300Ω CT	32Ω Tap @ 16Ω, 8Ω, 4Ω	18-189 ①						
T3	7300Ω CT	32Ω Tap @ 16Ω, 8Ω, 4Ω	18-189 ①						

① Alternate Part #P18-189.

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA: PACO PART No.	ITT PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
	CURRENT (Measured)						
M1	.100A	*	RE504 *	1N1764 *	F6 *	SR500 *	* Silicon Type
M2	.100A	*	RE504 *	1N1764 *	F6 *	SR500 *	♦ Selenium Type
M3	.001A	♦	1159 ♦		12 ♦		

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA: PACO PART No. FUSE	PACO PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M4	3AG	3A 250V			312003 (3AG 3A 250V)	342001	AGC 3	HKP

MISCELLANEOUS

ITEM No.	PART NAME	PACO PART No.	NOTES
M5	Switch		Input Selector (Rotary Wafer Type)
M6	Switch		Mode (Rotary Wafer Type)
M7	Switch		Equalization (DPDT Slide Type)
M8	Switch		Rumble Filter (DPDT Slide Type)
M9	Switch		Contour (DPDT Slide Type)
M10	Switch		System (DPDT Slide Type)
M11	Switch		Separation (DPDT Slide Type)
M12	Switch		Speaker Selector (DPDT Slide Type)
M13	Switch		Power Off-On (SPST Slide Type)

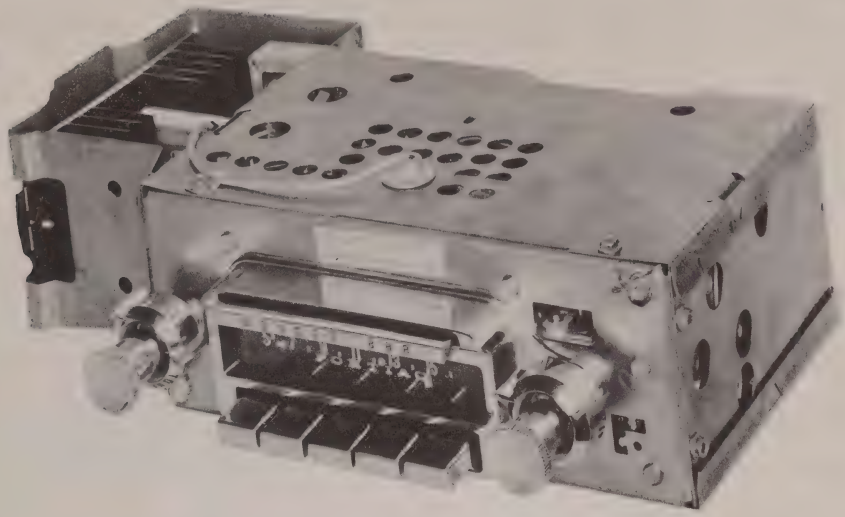
WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

PHOTOFACT® Folder with CIRCUITRACE®

PONTIAC MODEL 989615



TRADE NAME	Pontiac Model 989615 (For 1960 Pontiac Automobiles)
MANUFACTURER	Delco Radio Div., G. M. Corp., Kokomo, Indiana
TYPE SET	Battery Operated 5 Tube, 1 Transistor Custom Built Automobile AM Receiver
POWER SUPPLY	12 Volt Storage Battery
RATING	2.6 Amp. @ 12.6 Volts DC (13 Amp. When Tuning)
TUNING RANGE	BROADCAST 535 - 1615KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:
- A1 thru A4 ..... GENERAL CEMENT #9440
- A5, A9, A10 ... GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989 WALSCO #2515, 2531, 2532
- A6, A7, A8 .... GENERAL CEMENT #5000, 5003, 5066, 8276, 8290, 9087, 9089 WALSCO #2512, 2525, 2528

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	High side thru .1mfd to pin 7 (grid) of Converter. Low side to chassis.	262KC (400~ Mod.)	High frequency end stop	DC probe to point (A). Common to chassis.	A1, A2, A3	Adjust for maximum deflection.
2.	"	"	"	"	A4	Adjust for MINIMUM deflection.
	Check setting of Oscillator Core (A5). Rear of core should be 1 5/8" from mounting end of coil form.					
3.	High side thru 82mmf to antenna receptacle. Low side to chassis.	1615KC	High frequency end stop	DC probe to point (A). Common to chassis.	A6, A7, A8	Adjust for maximum deflection.
4.	"	600KC	600KC signal	"	A9, A10	"
5.	"	1615KC	1615KC signal	"	A7, A8	"
6.	"	1100KC	1100KC signal	"		Adjust pointer adjustment until pointer coincides with 1100Ω on dial.
7.	With radio installed in car and antenna fully extended tune in a weak station near 1000KC and adjust A8 for maximum output.					

PUSHBUTTON ADJUSTMENT

1. Pull pushbutton out.
2. Tune manually to desired station.
3. Press pushbutton in firmly.
4. Repeat for remaining pushbuttons.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of KD104

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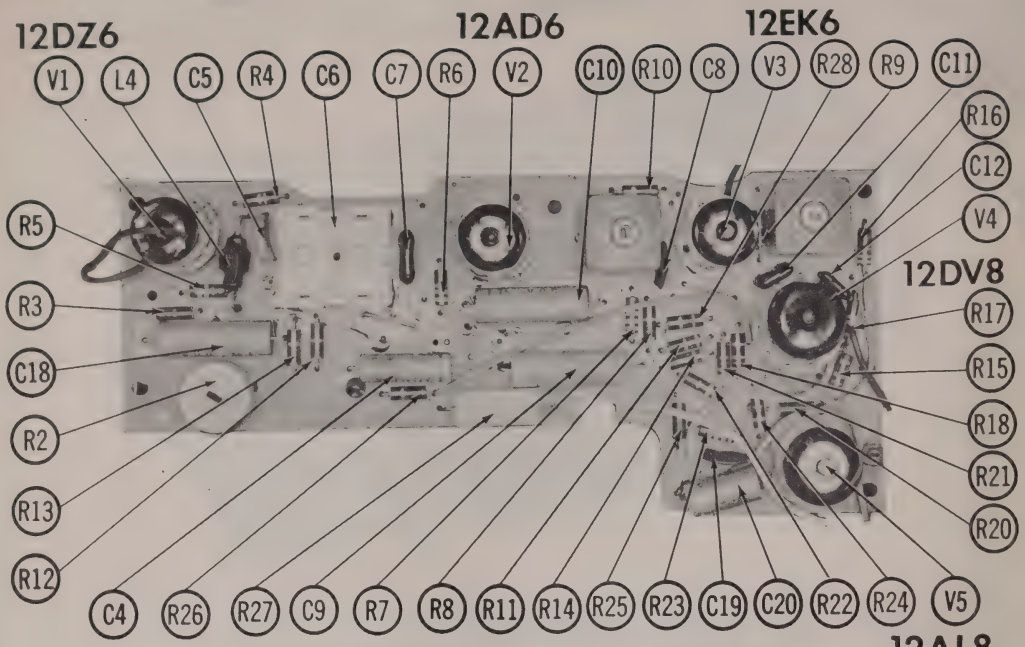
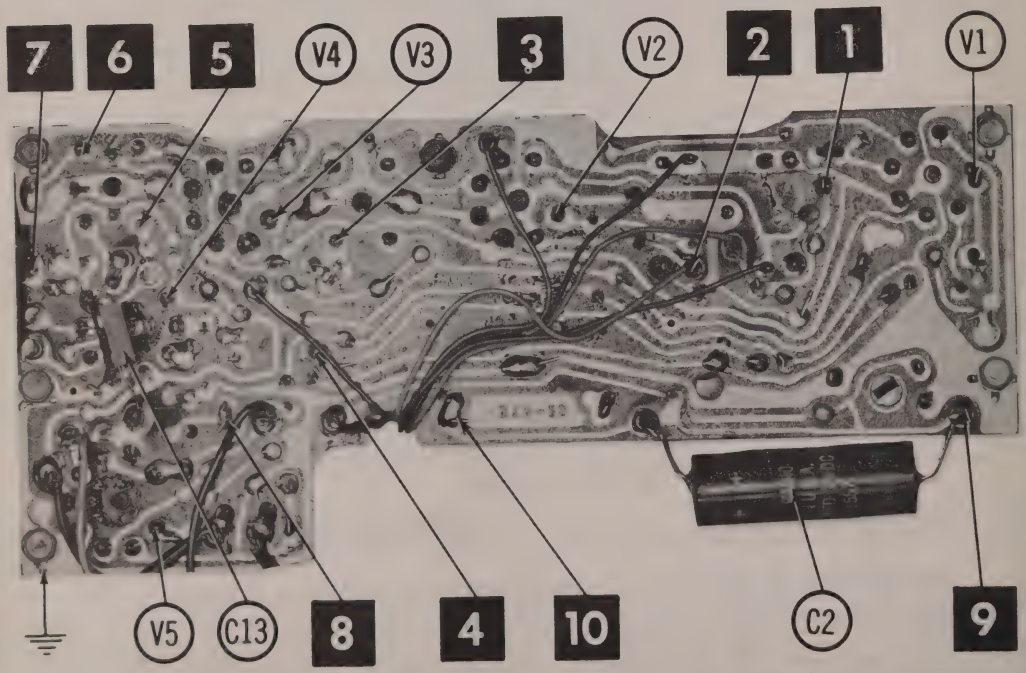
PONTIAC MODEL 989615
PONTIAC MODEL 989615
SET 505 FOLDER 10



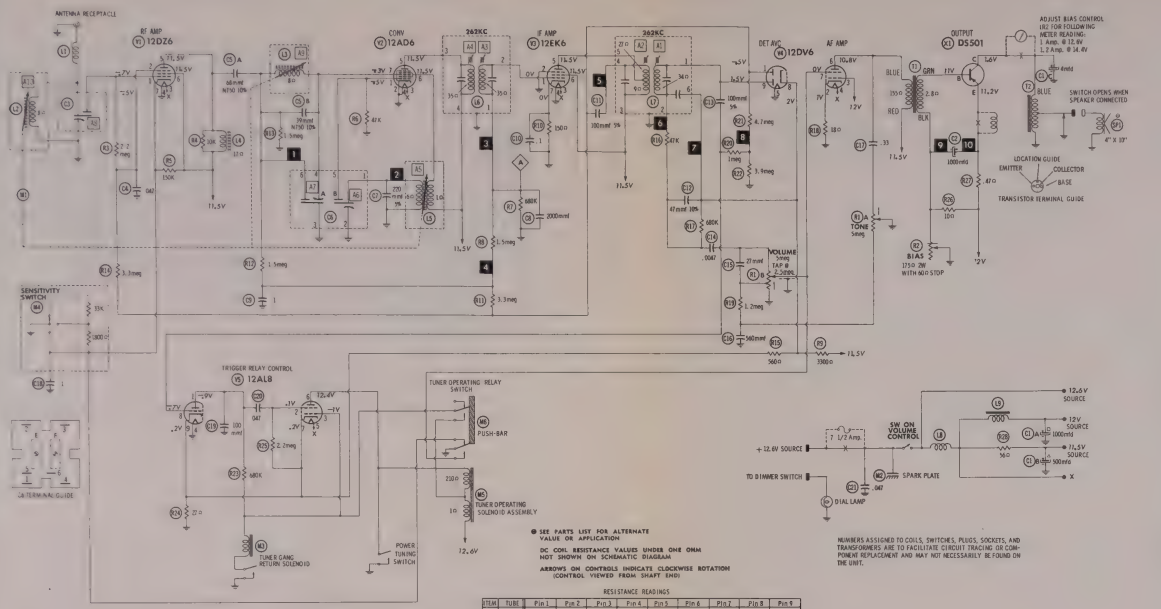
PRINTED BOARD—COMPONENT IDENT.



A Howard W. Sams CIRCUITRACE Photo

PRINTED BOARD

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12DZ6	32.5meg	8.3meg	.18	0Ω	75Ω	56Ω	0Ω		
V2	12AD6	47K	0Ω	.16	0Ω	90Ω	57Ω	1.4meg		
V3	12EK6	480K	0Ω	.16	0Ω	65Ω	56Ω	150Ω		
V4	12DV8	4.8meg	1.6Ω	.7Ω	.1Ω	0Ω	220Ω	0Ω	560Ω	730K
V5	12AL8	INF	2.7meg	INF	0Ω	.1Ω	220Ω	27Ω	1meg	27Ω

TRANSISTOR CIRCUIT RESISTANCE ON X1 NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Battery voltage maintained at 12.6 volts for voltage readings
5. Nominal tolerance on component values makes possible a variation of ±10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CircuiTrace

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PONTIAC MODEL 989615

PARTS LIST AND DESCRIPTIONS

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire ..... Use BELDEN No. 8885
Bonding Strap ..... Use BELDEN No. 8661

TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	RF Amplifier	12DZ6	V4	Det. - AVC - AF Amp.	12DV8
V2	Converter	12AD6	V5	Trigger Relay Control	12AL8
V3	IF Amplifier	12EK6			

◆ CBS ◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	DS-501	Output	2N235A			2N677 *	PNP

* New mounting holes required.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA DELCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	■1000	16	7273810	AFH3-54-41		WP300.9		TVAS-3021.5 *	
B	▲500	16							
C	4	11.5							
C2	1000	1	7271557	PRS1130	BR1000-6	TC-110	TD-1000-6	TVA-1104	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	EMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3		#7274175						
C4	.047 75V		P288N-047	DD-503	CUB2S47	1DP-2-473	GEM-4147	2TM-S47
C5A	68 N750 10%		N750-DI 68	DTN-68	C10Q68U	CCTN-680	CN7-468	10TCU-Q68
B	39 N750 10%			TCN-39	C10Q39U	CCTN-390	CN7-439	10TCU-Q39
C6A		#7273693						
B								
C7	220 5%		1469-00022	TCZ-220	22R5T22	CM-19B-22lJ	CNO-322	MS-322
C8	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C9	.1 75V		P288N-1	DF-104	CUB2P1	1DP-2-104	GEM-201	2TM-P1

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	EMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C10	.1 75V		P288N-1	DF-104	CUB2P1	1DP-2-104	GEM-201	2TM-P1
C11	100 5%		1469-0001	TCZ-100	22R5T1	CM-19B-101J	MCE235	MS-310
C12	47 10%		1469-000047	TCZ-47	22R5Q47	CM-19B-470K	CNO-447	MS-447
C13	100 5%		1469-0001	TCZ-100	22R5T1	CM-19B-101J	MCE235	MS-310
C14	.0047 200V		P288N-0047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C15	27		DI-27	DD-270	L10Q27	CCD-270	GP427	10TS-Q27
C16	560		DI-560	DD-561	L10T56	CCD-561	B-356	10TS-T56
C17	.33 200V		P288N-33		PM4P33	2DP-5-334	GEM-2033	2WF-P33
C18	.1 75V		P288N-1	DF-104	CUB2P1	1DP-2-104	GEM-201	2TM-P1
C19	100		BPD-0001	DD-101	L10T10	CCD-101	GP310	10TS-T10
C20	.047 100V		P288N-047	DD-503	CUB2S47	1DP-2-473	GEM-4147	2TM-S47
C21	.47 100V		P288N-47		CUB2P47	2DP-5-474	GEM-4047	2TM-P47

Delco Part Number.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA DELCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	5meg	½	7275708					Tone
B	5meg	½				† QJ-1346A		Volume
C	2.5meg Tap Switch							Power Off-On
R2	175Ω * 60Ω Stop	2(WW)	1221422 -					Bias

* Temperature Compensating.
† "Concentrikit" Equivalent: K-8 Kit with Base Elements and Shafts: B13-141, P17-031 (Panel)
B18-141X, R1-115 (Rear)
840 (Bushing)
76-1 (Switch)

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R3	2.2meg	
R4	10K	
R5	150K	
R6	47K	
R7	680K	
R8	1.5meg	
R9	3300Ω	
R10	150Ω	
R11	3.3meg	

ITEM No.	RATING	REMARKS
R12	1.5meg	
R13	1.5meg	
R14	3.3meg	
R15	560Ω	
R16	47K	
R17	680K	
R18	18Ω	
R19	1.2meg	
R20	1meg	

ITEM No.	RATING	REMARKS
R21	4.7meg	
R22	3.9meg	
R23	680K	
R24	27Ω	
R25	2.2meg	
R26	10Ω	
R27	.47Ω	#7270608
R28	56Ω	

Delco Part Number - Fuse Type.

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		DELCO PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	RF Coil	7255738	19-1004	19-1004	BC-565	4610		6.5uh
L2	Ant. Coil	1221138						
L3	RF Coil	1221138						
L4	RF Choke	7269684						18MH
L5	Osc. Coil	1221151						
L6	Input IF Trans.	1221257	16-6756	16-6756	BC-344	13-PH1		
L7	Output IF Trans.	1221253			BC-424			
L8	Hash Choke	1217846						1.4uh

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA						
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 ~)	DELCO PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L9	1.1A	.7Ω	.011 Hy.	7274342				TC-2		

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC.	DELCO PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	4.4	1	1221425			TA-48			

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE	REPLACEMENT DATA							NOTES
	PRI.	DELCO PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	10Ω Tap @ 3-4Ω	1221428							

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	DELCO PART No.	QUAM PART No.	
SP1	4" x 10"	PM	3-4Ω	7275766 *		* Alternate Part #6109.

MISCELLANEOUS

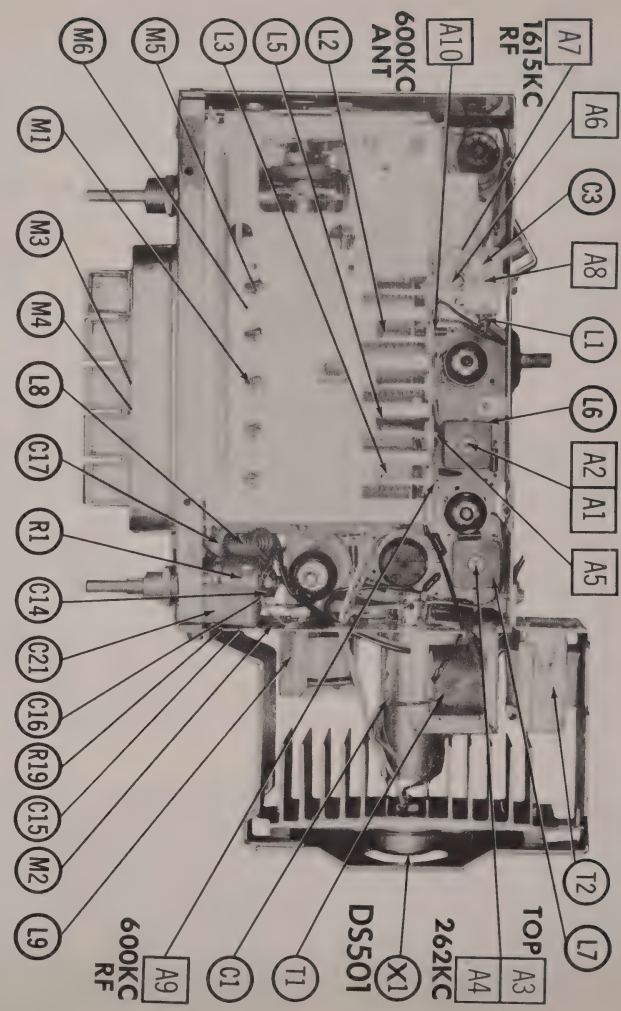
ITEM No.	PART NAME	DELCO PART No.	NOTES
M1	Tuner		Pushbutton (Signal Seeking), Series F3 (Wonder Bar Type)
M2	Spark Plate	7271564	
M3	Switch	1221408	Includes Push Bar and Solenoid
M4	Switch	7275505	Sensitivity, Includes Push Bar and 33K and 1800Ω Resistors
M5	Solenoid Assembly	1221409	Includes Plunger
M6	Relay	7270545	Tuner Operating

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	536196	Tuning, Volume
Knob	532455	Tone (Catalina Series Only)
Knob	536278	Tone
Knob	532707	Dummy (Catalina Series Only)
Knob	536108	Dummy
Pushbutton Ass'y	1221459	Includes Front Bearing Plates and Slides and Pushbuttons
Pushbutton Ass'y	7275218	Individual
Treadle Bar	7270014	
Pointer Assembly	7273355	

CHASSIS—TOP VIEW

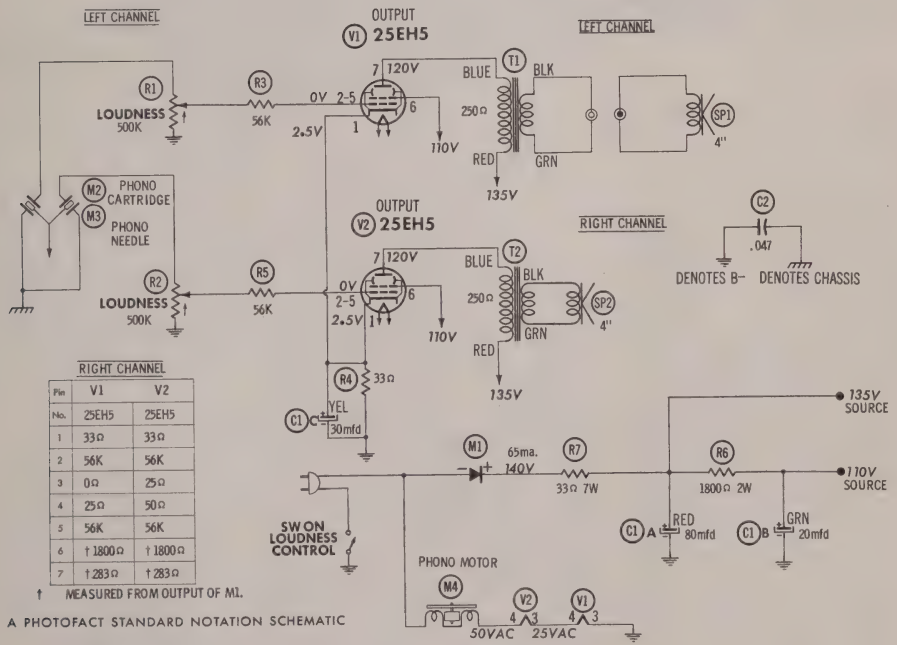


PHOTOFACT® Folder

RCA VICTOR MODELS SES1EH, SES1EK, SES1LJ (Ch. RS-186)

RCA VICTOR MODELS SES1EH, SES1EK, SES1LJ (Ch. RS-186)

TRADE NAME	RCA Victor Models SES-1EH, SES-1EK, SES-1LJ (Ch. RS-186)
MANUFACTURER	RCA Victor Radio & "Victrola" Div., Radio Corp. of America, Camden 8, N. J.
TYPE SET	AC Operated 2 Tube Stereo Phono Amplifier With 4 Speed Manual Record Player
POWER SUPPLY	110 - 120 Volts AC, 60 Cycles RATING 46 Watts, .45 Amp. @ 117 Volts AC (With Motor)



RIGHT CHANNEL

Pin No.	V1 25EH5	V2 25EH5
1	33Ω	33Ω
2	56K	56K
3	0Ω	25Ω
4	25Ω	50Ω
5	56K	56K
6	†1800Ω	†1800Ω
7	†283Ω	†283Ω

† MEASURED FROM OUTPUT OF M1.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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SET 505 FOLDER 11

PARTS LIST AND DESCRIPTIONS

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

TUBES

◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆

ITEM No.	USE	TYPE
V1	Left Channel Output	25EH5
V2	Right Channel Output	25EH5

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA RCA VICTOR PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	80	200	108686	PR3-030	BBRT7V4125	WT407	TDLT-8	TVA-4618	
B	20	150							
C	30	5							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA RCA VICTOR PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500K	½	108707	B-617	A47-500K-S	Q11-133	U50	Loudness, Left Channel
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R2A	500K	½	108706	B-60-S	A47-500K-Z	Q13-133	U48	Loudness, Right Channel
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
C	Switch			Not Req.	SWE-12	76-1	US-26	Power Off-On

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R3	56K	
R4	33Ω	

ITEM No.	RATING	REMARKS
R5	56K	
R6	1800Ω 2W	

ITEM No.	RATING	REMARKS
R7	33Ω 7W	Pt. #108716 IRC#PW10-33Ω

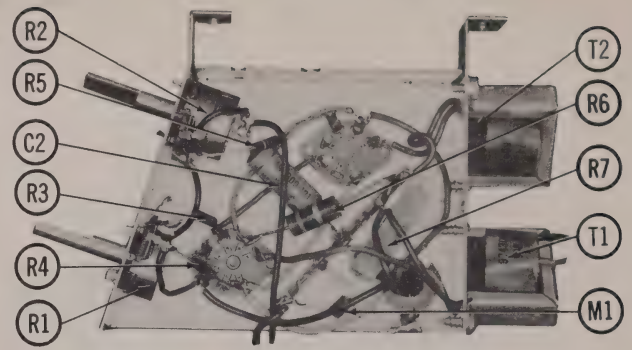
TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA RCA VICTOR PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	2800Ω	3-4Ω	108679	A-3025	AU-605	A-3332	24S53	S-12X	
T2	2800Ω	3-4Ω	108679	A-3025	AU-605	A-3332	24S53	S-12X	

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA RCA VICTOR PART No.	REPLACEMENT DATA QUAM PART No.	NOTES
SP1	4"	PM	3-4Ω	79696-A	4A1	
SP2	4"	PM	3-4Ω	79696-A	4A1	

CHASSIS—BOTTOM VIEW



RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA RCA VICTOR PART No.	ITT PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.065A	108680 *	RE504 *	1NI763 *	2F4 *	SR200 *	* Silicon Type

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA RCA VICTOR PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. NEEDLE	JENSEN PART No. CARTRIDGE	JENSEN PART No. NEEDLE	SONOTONE PART No. CARTRIDGE	SONOTONE PART No. NEEDLE
M2	108718	13TB		26V		49			

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA RCA VICTOR PART No.	REPLACEMENT DATA JENSEN PART No.	REMARKS
M3	108719 † (LP)	CRA-55X † or CRA-55XD ♦	† Jewel ♦ Diamond
	105483 † (78 RPM)	CRA-55 † or CRA-55D ♦	

MISCELLANEOUS

ITEM No.	PART NAME	RCA VICTOR PART No.	NOTES
M4	Motor Ass'y.	971580-4 107	Complete (Includes Motor #108788)
	Motor Ass'y.	971580-4 190	Complete (Includes Motor #108788)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	108736	Volume, Left
Knob	108737	Volume, Right
Cabinet	X4672	Golden White & Mint Green, Model SES-1EH
Cabinet	X4674	Frost Blue & Charcoal Tweed, Model SES-1LJ
Cabinet	X4673	Frost White & Tan Tweed, Model SES-1EK
Handle	108684	Model SES-1EH, SES-1EK
Handle	108685	Model SES-1LJ

PHOTOFACT® Folder

REALISTIC
MODEL CARNIVAL

REALISTIC
MODEL CARNIVAL

REALISTIC
MODEL CARNIVAL

TRADE NAME	Realistic Model Carnival
SUPPLIER	Radio Shack Corp., 730 Commonwealth Ave., Boston 17, Mass.
TYPE SET	AC Operated 3 Tube Audio Amplifier
POWER SUPPLY	110 - 120 Volts AC, 60 Cycles RATING 27 Watts, .34 Amp. @117 Volts AC

SET 505 FOLDER 12

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	GENERAL ELECTRIC • RAYTHEON • SYLVANIA • TYPE
V1	Preamp. -AF Amp.	12AX7
V2	Output	6V6GT

ITEM No.	USE	TYPE
V3	Rectifier	6X5GT

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA REALISTIC PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	20	350		AFH3-28	C0220	FP376.3	TMT-3715	TVL-3639.8	
B	10	350							
C	10	350							
C2	10	50		PRS1320	BBR10-50	TC32	TD-10-50	TVA-1304	①
C3	25	25		PRS1260	BBR25-25	TC26	TD-25-25	TVA-1205	②

① Some versions may use 5mfd in this application.
② Some versions may use 20mfd in this application.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C4	.01 1000V		P1088N-01	DD-103	CUB10S1	16DP-3-103	GEM-1011	10TM-S1
C5	.01 1000V		P1088N-01	DD-103	CUB10S1	16DP-3-103	GEM-1011	10TM-S1
C6	.01 1000V		P1088N-01	DD-103	CUB10S1	16DP-3-103	GEM-1011	10TM-S1
C7	.002 1000V	(.004) †	P1088N-002	DD-202	CUB10D2	16DP-1-202	GEM-1022	10TM-D2
C8	.002 1000V	Note 1	P1088N-002	DD-202	CUB10D2	16DP-1-202	GEM-1022	10TM-D2
C9	.03 1000V		P1088N-03		CUB10S3	16DP-4-303	GEM-1013	10TM-S3

† Alternate Value.
Note 1. Not used in some versions.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA REALISTIC PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500K	½		AB-60				Microphone
B	Shaft			AK-29				
R2A	500K	½		AB-60				Phono-Tuner
B	Shaft			AK-29				
R3A	500K	½		AB-60				Tone
B	Shaft			AK-29				
C	Switch			KR-3				Power Off-On

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

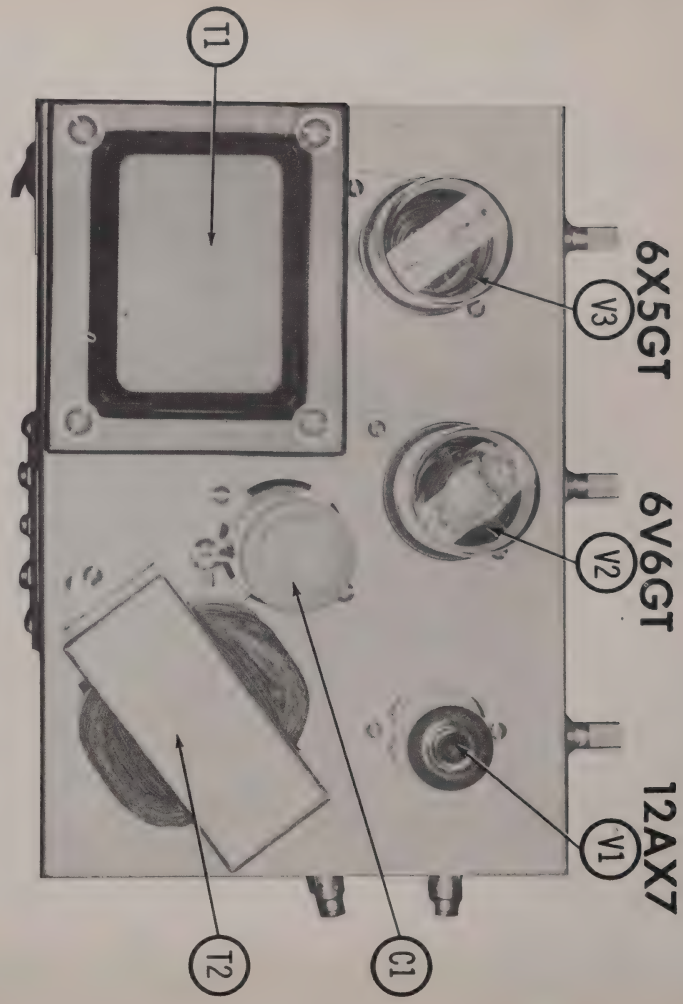
ITEM No.	RATING	REMARKS
R4	3meg	
R5	100K	
R6	500K	
R7	500K	

ITEM No.	RATING	REMARKS
R8	100K	
R9	5000Ω	
R10	500K	
R11	250Ω 10W	IRC#PW10-250Ω

ITEM No.	RATING	REMARKS
R12	5000Ω 10W	IRC#PW10-5K
R13	30K 10W	IRC#PW10-30K
R14	30K	Note 1

Note 1. Not used in some versions.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						NOTES
	PRI.	SEC. 1	SEC. 2	REALISTIC PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	117V Ⓐ .34A	520VCT Ⓐ .040A	6.3VCT Ⓐ 1.3A				PM8403①			

① Tape 5V winding and center tap on 6.3V winding.

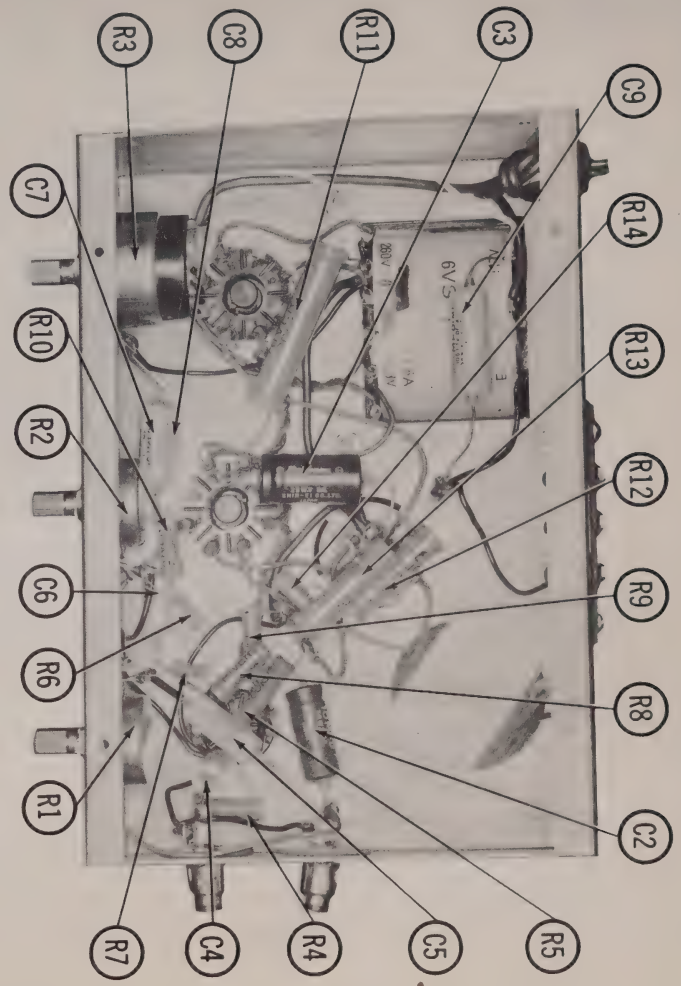
TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	REALISTIC PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	6800Ω	8Ω Tap Ⓐ 4Ω					22S58		

WIRING DATA

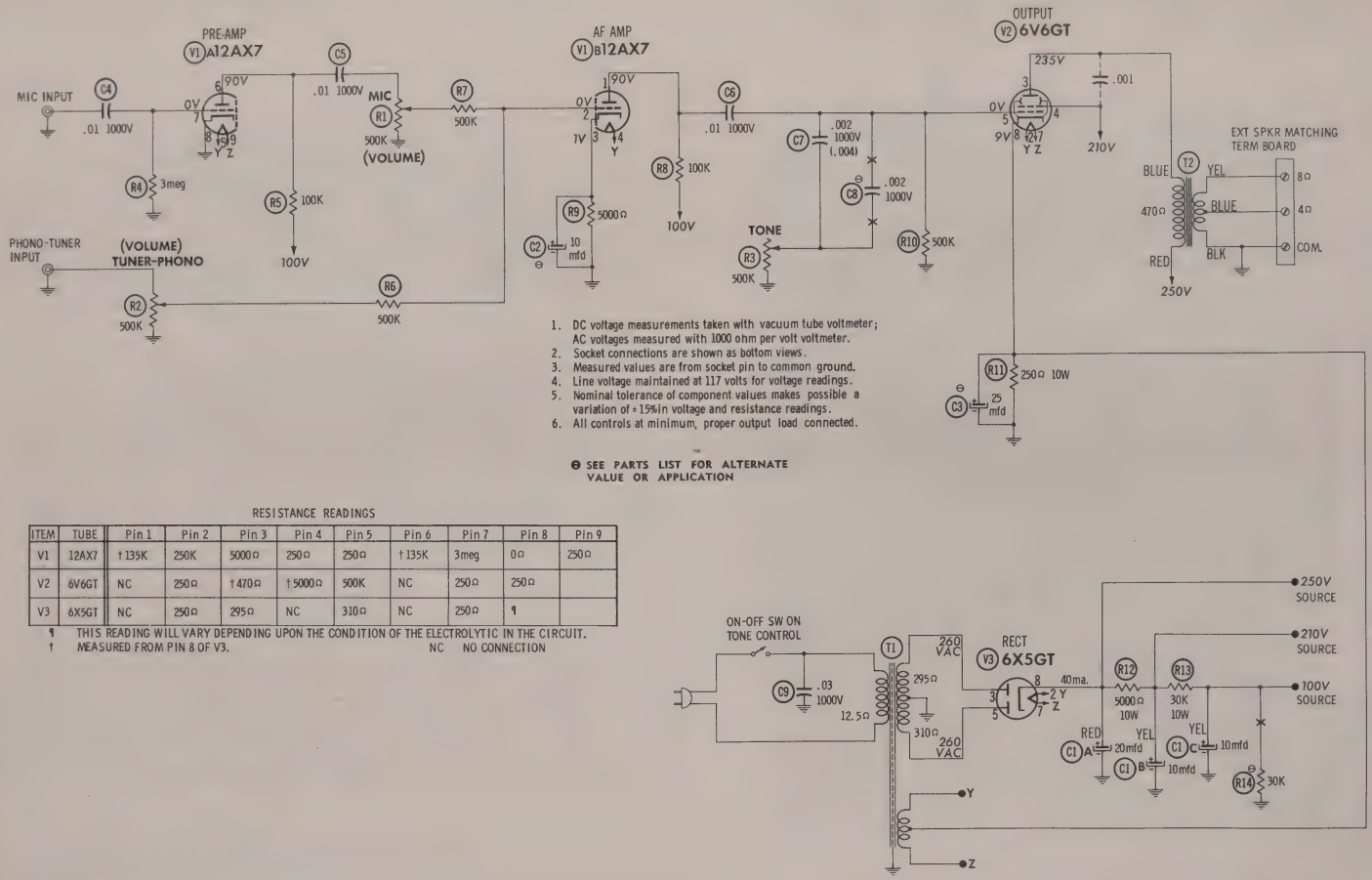
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)

CHASSIS—BOTTOM VIEW



REALISTIC
MODEL CARNIVAL

FOLDER 12



1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7	†135K	250K	5000Ω	250Ω	250Ω	†135K	3meg	0Ω	250Ω
V2	6V6GT	NC	250Ω	†470Ω	†5000Ω	500K	NC	250Ω	250Ω	
V3	6X5GT	NC	250Ω	295Ω	NC	310Ω	NC	250Ω	¶	

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 8 OF V3. NC NO CONNECTION

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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REALISTIC MODEL CARNIVAL

PHOTOFACT® Folder

ROLAND
MODEL 8501

ROLAND
MODEL 8501

ROLAND
MODEL 8501

TRADE NAME	Roland Model 8501
MANUFACTURER	Roland Radio Corp., A Div. of Herold Radio & Electronics, 716 S. Columbus Ave., Mount Vernon, N. Y.
TYPE SET	AC Operated 5 Tube AM Receiver With 4 Speed Automatic Record Changer
POWER SUPPLY	110 - 120 Volts AC, 60 Cycles RATING 22 Watts, .21 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	535 — 1630KC

FOR SERVICE INFORMATION ON RECORD CHANGER PART #300410 — SEE SIMILAR MONARCH UA8 — PHOTOFACT SET 381 FOLDER 11 OR RECORD CHANGER MANUAL RC-11

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools: A1, A2... GENERAL CEMENT #5097, 8727
WALSCO #2515
A3, A4... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to pin 7 (grid) of Converter. Low side to chassis.	455KC (400~ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2	Adjust for maximum output.
2.	Loop	1600KC	1600KC	"	A3	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.	"	1400KC	1400KC Signal.	"	A4	Adjust for maximum output while rocking tuning gang.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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SET 505 FOLDER 13

PARTS LIST AND DESCRIPTIONS

TUBES

• GENERAL ELECTRIC • RAYTHEON • SYLVANIA •					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Converter	12BE6	V4	Output	50C5
V2	IF Amplifier	12BA6	V5	Rectifier	35W4
V3	Det.-AVC-AF Amp.	12AV6 (12AT6) *			

* Alternate

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA ROLAND PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	40	150		PRS3800	BBRT84215	TCT3117	TDLT-7	TVA-3455	
B	80	150							
C	20	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	.05 200V		P288N-05	DD-503	CUB2S5	4DP-3-503 *	GEM-415	2TM-S5
C3	270 N330 10%							
C4	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C5	.01 600V		P688N-01	D6-103	CUB6S1	6DP-2-103	GEM-611	6TM-S1
C6	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C7	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA ROLAND PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1meg	½	360081	B-70-S	A47-1meg-Z	Q13-137	U53	Volume
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
C	Switch			Not Req.	SWE-12	76-1	U8-26	Power Off-On
R2A	100K	½	360050	B-41	A47-100K-Z	Q13-128	U39	Tone
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R3	22K	
R4	2.2meg	
R5	4700Ω	

ITEM No.	RATING	REMARKS
R6	68K	
R7	150Ω	
R8	2200Ω 1W	

ITEM No.	RATING	REMARKS
R9	330Ω 1W	

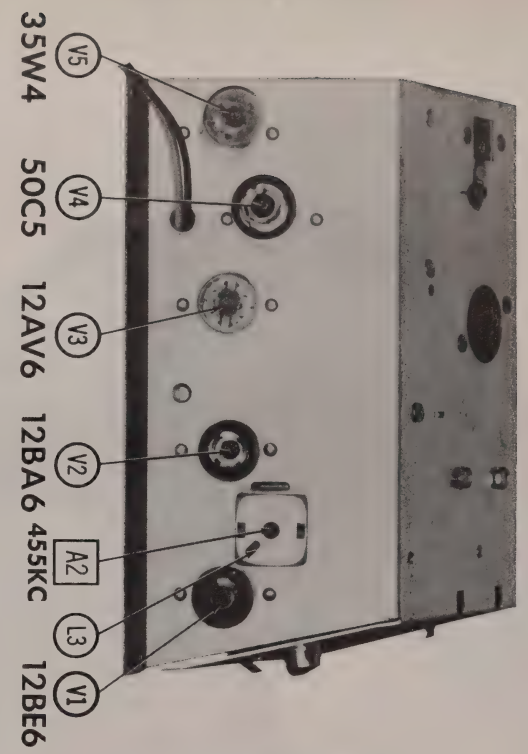
COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA ROLAND PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Loopstick		BC-419	705-A		
L2	Osc. Coil		BC-393	69-OSC		
L3	IF Trans.		BC-352	12-C1	RF-1	

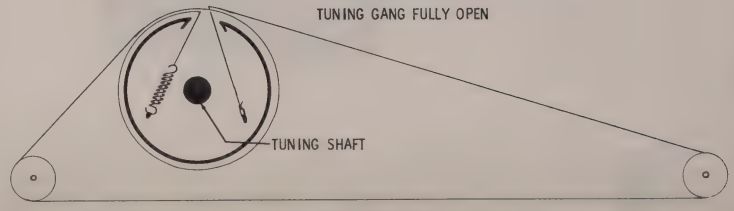
TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA ROLAND PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	2700Ω	3-4Ω	430202	A-3025	AU-605	A-3332	24S53	S-12X	

CHASSIS—TOP VIEW



DIAL CORD STRINGING



FRONT VIEW

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	ROLAND PART No.	QUAM PART No.	
SP1	5"	PM	3-4Ω	405005	5A1	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	ROLAND PART No.	REPLACEMENT DATA	
K1	Audio Coupling	220mmf, 250mmf, 5000mmf, 5000mmf, 470K, 470K, 6.8meg		Aerovox Centralab Cornell-Dubilier Mallory Sprague	PA-113-2 PC-151 116TM2 MS-107 DT-2

PHONO CARTRIDGE

ITEM No.	ROLAND PART No.	REPLACEMENT DATA							
		ASTATIC PART No.		ELECTRO-VOICE PART No.		JENSEN PART No.		SONOTONE PART No.	
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE
M1		422TB		26S		49		12TH-S	

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA		REMARKS
	ROLAND PART No.	JENSEN PART No.	
M2	(78 RPM)	CRA-55 † or CRA-55D ♦	† Jewel ♦ Diamond
	(LP)	CRA-55LP † or CRA-55LPD ♦	

MISCELLANEOUS

ITEM No.	PART NAME	ROLAND PART No.	NOTES
M3	Tuning Cap.		2 Gang (Ant. 28—490mmf, Osc. 16—170mmf)
M4	Switch		Radio-Phono (DPDT, Slide Type)
M5	Switch		Changer Off-On (Part of Changer)
M6	Motor		Turntable Drive

CABINETS & CABINET PARTS

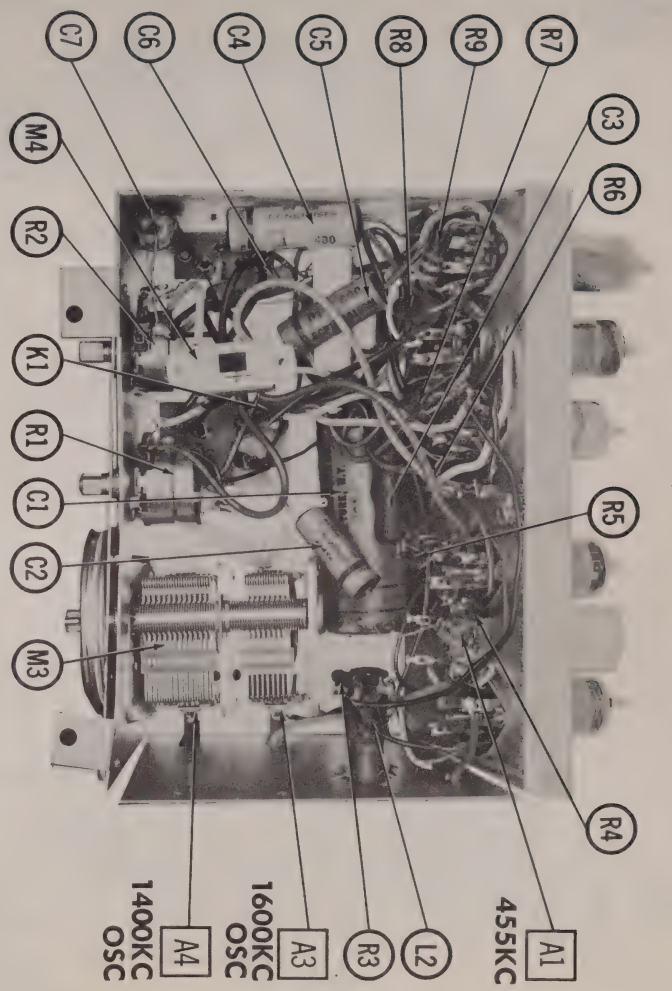
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

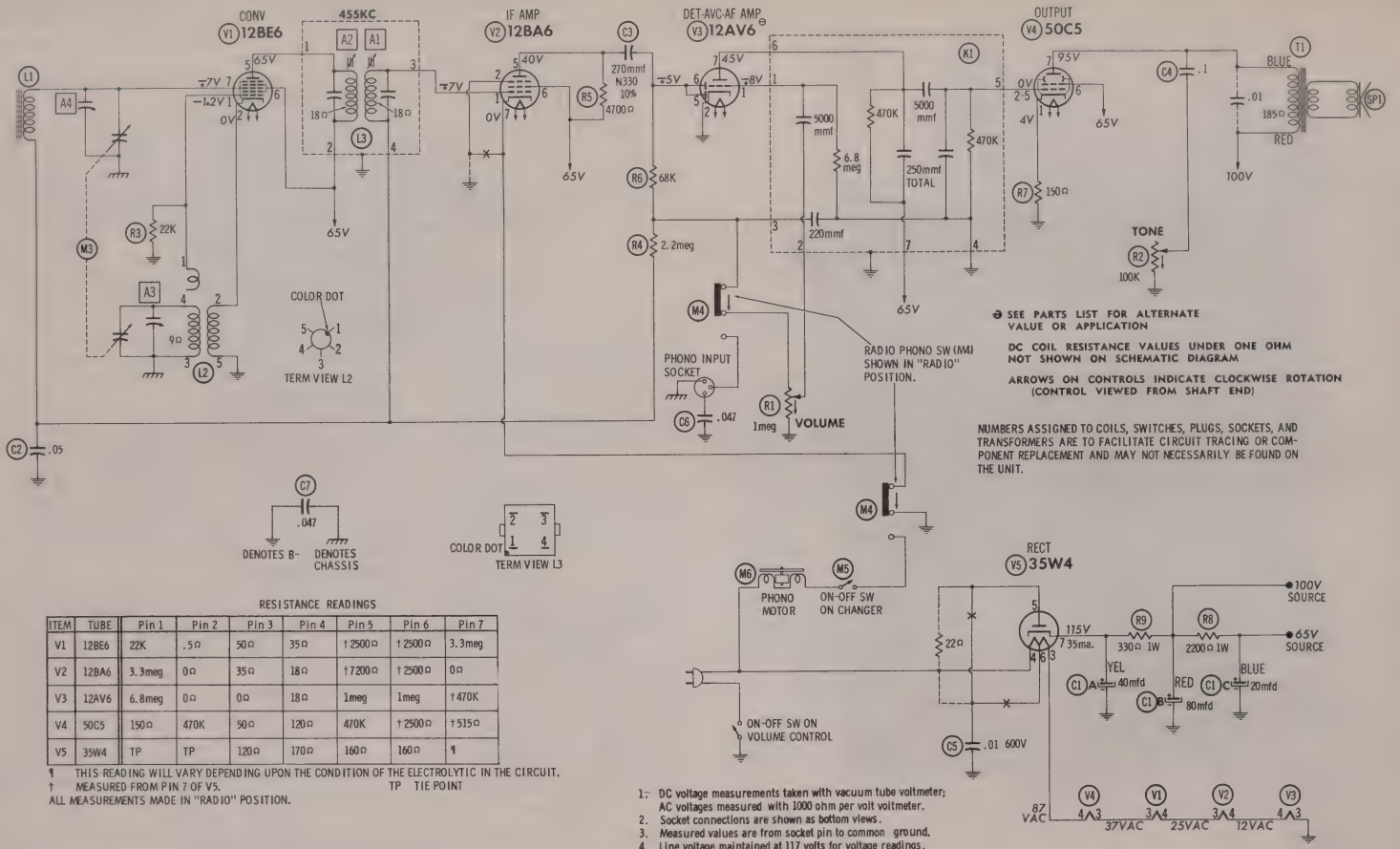
NAME	PART NO.	DESCRIPTION
Knob	270427	Tuning
Knob	270425	Loudness
Knob	270426	Tone
Cabinet	241660	Complete, Black & White

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

CHASSIS—BOTTOM VIEW





- ∂ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
- DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
- ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12BE6	22K	.5Ω	50Ω	35Ω	†2500Ω	†2500Ω	3.3meg
V2	12BA6	3.3meg	0Ω	35Ω	18Ω	†7200Ω	†2500Ω	0Ω
V3	12AV6	6.8meg	0Ω	0Ω	18Ω	1meg	1meg	†470K
V4	50C5	150Ω	470K	50Ω	120Ω	470K	†2500Ω	†515Ω
V5	35W4	TP	TP	120Ω	170Ω	160Ω	160Ω	¶

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 7 OF V5. TP TIE POINT
ALL MEASUREMENTS MADE IN "RADIO" POSITION.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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ROLAND MODEL 8501

PHOTOFACT® Folder with CIRCUITRACE®

STEELMAN MODEL 2-6541

STEELMAN
MODEL 2-6541

STEELMAN
MODEL 2-6541

TRADE NAME	Steelman Model 2-6541
MANUFACTURER	Steelman Phono & Radio Co., 2-30 Anderson Ave., Mount Vernon, N. Y.
TYPE SET	AC Operated 9 Tube FM-AM Tuner, 3 Tube Stereo Preamplifier, 6 Tube Stereo Amplifier and 4 Speed Automatic Record Changer
POWER SUPPLY	110-120 Volts AC, 60 Cycles RATING 168 Watts, 1.6 Amp. @ 117 Volts AC (Stereo-Radio)
TUNING RANGES—BROADCAST	535 —1620KC FREQ. MOD. 88 — 108MC

FOR SERVICE INFORMATION ON RECORD CHANGER — SEE SIMILAR V-M 1200A — PHOTOFACT SET 353 FOLDER 16 OR RECORD CHANGER MANUAL RC-10

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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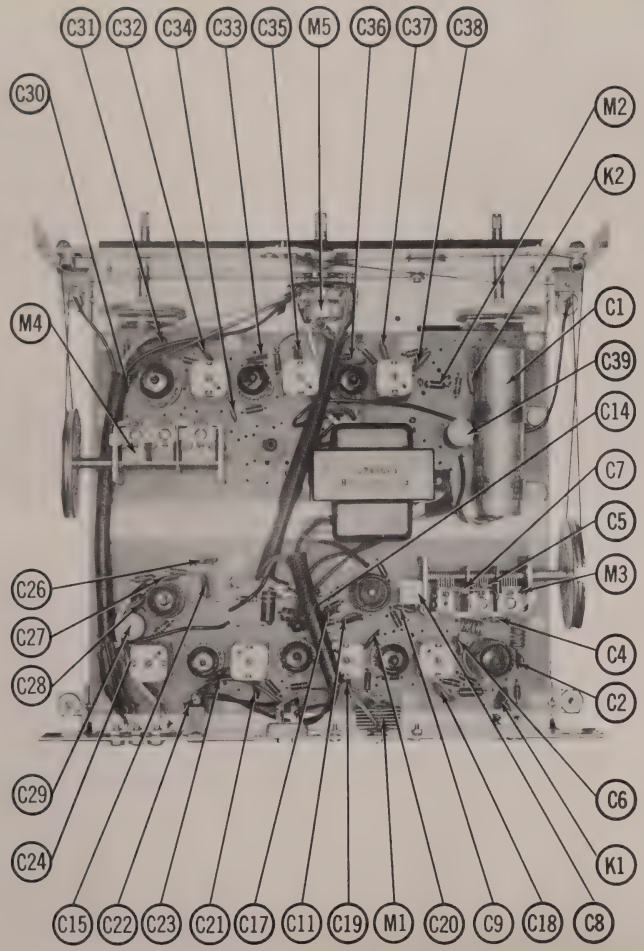
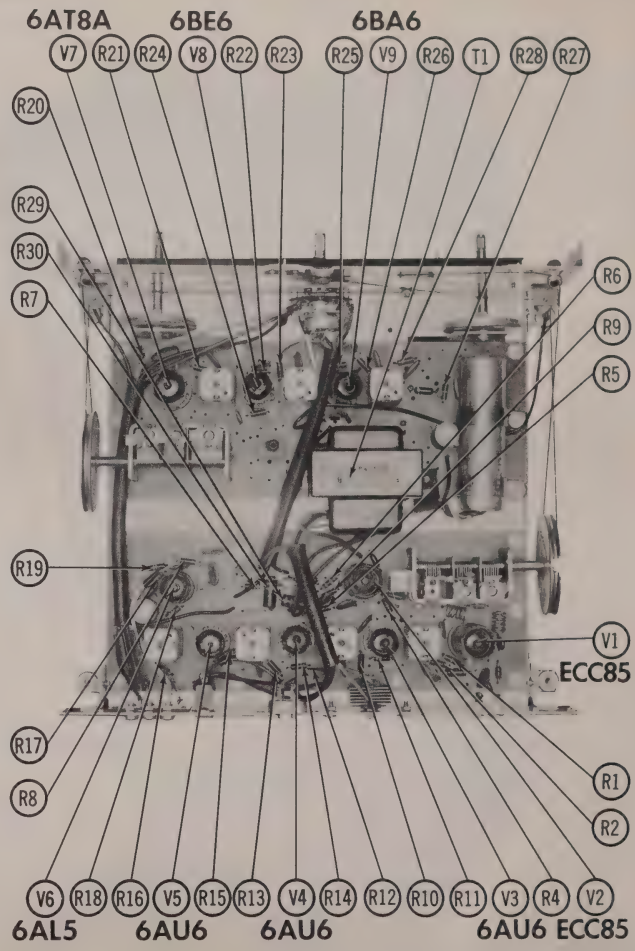
KN003

DATE 11—60 SET 505 FOLDER 14

SET 505 FOLDER 14



TUNER CHASSIS TOP VIEW -
CAPACITOR & MISC. IDENT.



TUNER CHASSIS TOP VIEW
RESISTOR & TUBE IDENT.

TUNER PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE
V1	FM RF Amp. -FM Mixer	ECC85/6AQ8
V2	FM AFC-FM Osc.	ECC85/6AQ8
V3	1st FM IF Amplifier	6AU6
V4	2nd FM IF Amplifier	6AU6
V5	FM Limiter	6AU6

ITEM No.	USE	TYPE
V6	Discriminator	6AL5
V7	AM RF Amplifier	6AT8A
V8	AM Converter	6BE6
V9	AM IF Amplifier	6BA6

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA STEELMAN PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	60	200	JE2352713	PR3-020	BBRT0235	WT458		TVL-2461	
B	60	200			BR6025			TVA-1513	
C	60	200							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	47 N750		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C3	6.8 10%		NPO-SI 6.8	TCZ-6R8	C10V68C	CCTO-6R8	CNO-568	10TCC-V68
C4	.47 10%		NPO-SI .5	TCZ-R5				
C5	4.7 N750		N750-DI 4.7	DTN-5	C10V47U	CCTN-050	CN7-547	10TCU-V47
C6	2000		BPD-002	DD-202	BYA10D2	CCD-202	GP220	5HK-D20
C7	1.5 10%		NPO-SI 1.5	DTZ-1R5	C10V15C	CCTO-1R5	CNO-515	10TCC-V15
C8	1-10			829-10				
C9	100 N750		N750-DI 100	DTN-100	C10T1U	CCTN-101	CN7-310	10TCU-T10
C10	4.7 N750		N750-DI 4.7	DTN-5	C10V47U	CCTN-050	CN7-547	10TCU-V47
C11	470		BPD-00047	DD-471	BYA10T47	CCD-471	GP347	10TS-T47
C12	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C13	10 N1500			TCL-10		*		
C14	470		BPD-00047	DD-471	BYA10T47	CCD-471	GP347	10TS-T47
C15	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C16	47 N750		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C17	470		BPD-00047	DD-471	BYA10T47	CCD-471	GP347	10TS-T47
C18	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C19	2000		BPD-002	DD-202	BYA10D2	CCD-202	GP220	5HK-D20
C20	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C21	2000		BPD-002	DD-202	BYA10D2	CCD-202	GP220	5HK-D20
C22	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C23	47 N750		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C24	2000		BPD-002	DD-202	BYA10D2	CCD-202	GP220	5HK-D20
C25	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C26	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C27	100 N750		N750-DI 100	DTN-100	C10T1U	CCTN-101	CN7-310	10TCU-T10
C28	2000 10%		DI-2000		1R5D2	CCD-202	GP220	10TS-D20
C29	.05 200V		P2151N-047	DD-503	CUB2S5	4DP-3-503	GEM-415	2TM-S5
C30	47 N750		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C31	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S5
C32	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C33	100 N750		N750-DI 100	DTN-100	C10T1U	CCTN-101	CN7-310	10TCU-T10
C34	47 N750		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C35	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C36	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C37	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C38	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C39	.05 200V		P215N-047	DD-503	CUB2S5	4DP-3-503	GEM-415	2TM-S5

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R1	1meg	
R2	15K	
R3	10K	
R4	22K	
R5	1000Ω	
R6	39Ω	
R7	470K	
R8	2.2meg	
R9	1000Ω	
R10	1000Ω	

ITEM No.	RATING	REMARKS
R11	68Ω	
R12	1000Ω	
R13	1000Ω	
R14	68Ω	
R15	100K	
R16	6800Ω	
R17	180K	
R18	180K	
R19	22K	
R20	1meg	

ITEM No.	RATING	REMARKS
R21	1000Ω	
R22	1meg	
R23	1000Ω	
R24	22K	
R25	470K	
R26	1000Ω	
R27	220K	
R28	3.3meg	
R29	330Ω 2W	
R30	330Ω 2W	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	STEELMAN PART No.	REPLACEMENT DATA	
K1	FM Antenna Filter	470mmf, 68Ω	STCOM2553	Aerovox	PA-98
K2	AM Diode Filter	150mmf, 150mmf, 47K	PC781599	Centralab	PC-51
				Cornell-Dubilier	UTM2
				Sprague	D-2

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA STEELMAN PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	FM Ant. Coil		19-2003	19-2003		4584		.24uh
L2	RF Choke							3.3uh
L3	FM RF Coil							
L4	FM Mixer Coil							
L5	FM Osc. Coil							
L6	Cathode Choke		19-1000	19-1000	BC-561	4602		1uh
L7	RF Choke							3.3uh
L8	1st FM IF Trans.	GT2092595	16-3490	16-3490		1463-PC		
L9	2nd FM IF Trans.	GT2092596	16-3490	16-3490		1463-PC		
L10	3rd FM IF Trans.	GT2092597	16-3490	16-3490		1463-PC		
L11	Discriminator	GT2092598						
L12	Loopstick				BC-419			
L13	AM RF Trans.	GTCOM2751						
L14	AM Osc. Coil	GLCOM2738						
L15	1st AM IF Trans.	GTCOM2752	16-6780	16-6780	BC-356	13-PC1	RF-4	
L16	2nd AM IF Trans.	GTCOM2753	16-6780	16-6780	BC-356	13-PC1	RF-4	

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	REPLACEMENT DATA STEELMAN PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V Ⓐ .4A	130VⒶ .055A Tap Ⓐ 6.3V Ⓐ 3.1A	FT2352712-B①						

① Alternate Part #FT2352712.

TUNER PARTS LIST AND DESCRIPTIONS (Continued)

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					NOTES
	CURRENT (Measured)	STEELMAN PART No.	ITT PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	
M1	.055A	Z1122134*	1234AH*	1N1763♦	75*	SR200♦	* Selenium ♦ Silicon

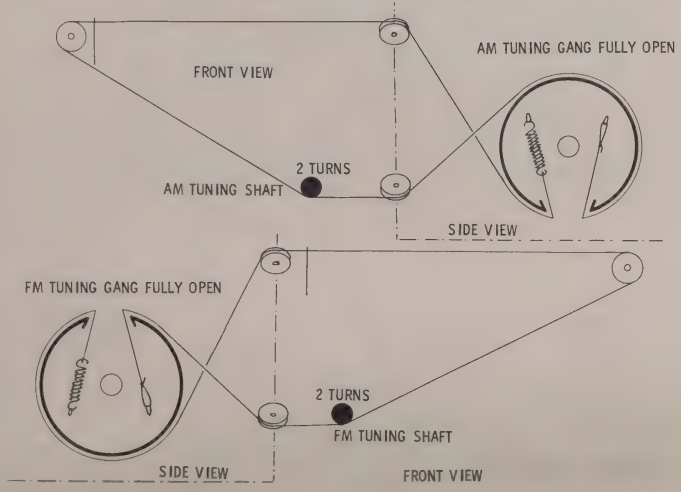
CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		STEELMAN PART No.	CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M2	1N541	GC1041698	1N295	1N295	1N295	AM Detector (Pigtail)

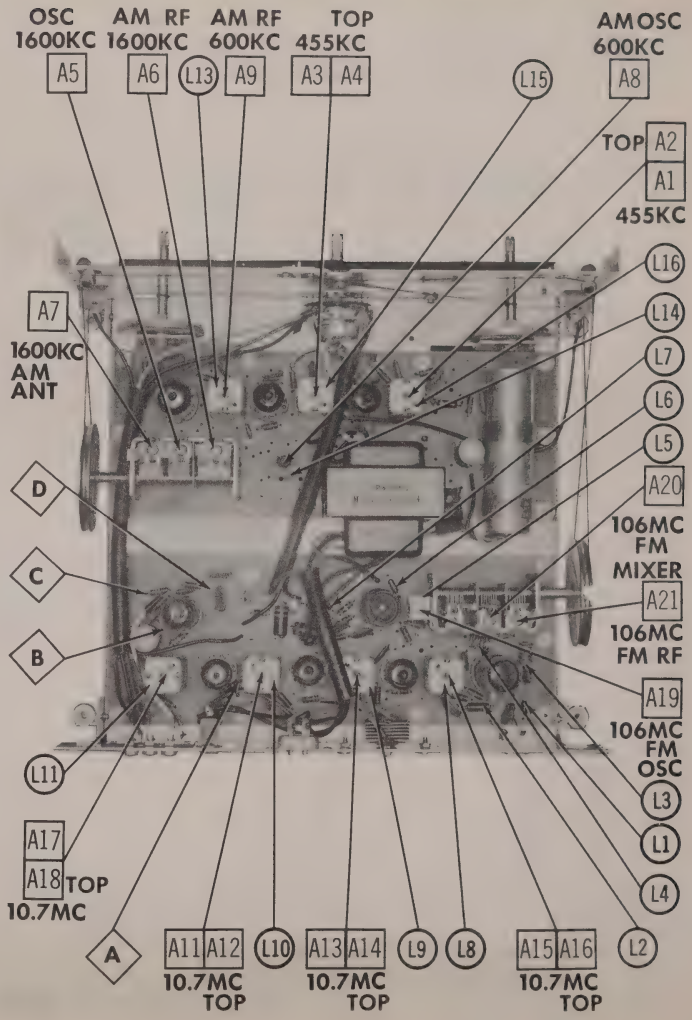
MISCELLANEOUS

ITEM No.	PART NAME	STEELMAN PART No.	NOTES
M3	Tuning Cap	JV2092541	FM, 3 Gang
M4	Tuning Cap	JV2352725	AM, 3 Gang
M5	Switch	ER2352897	Function (Rotary Type) With Ganged Off-On Switch
	FM Printed Board	PC2092542B	
	AM Printed Board	PCCOM2739B	

DIAL CORD STRINGING



TUNER CHASSIS - TOP VIEW



ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use only enough generator output to provide a usable indication.
Suggested alignment tools: A1 thru A4, A9, A11 thru A18. . GENERAL CEMENT #5097, 8727
WALSCO #2515
A5, A6, A7, A19, A20, A21. . . . . GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520
A8. . . . . GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545

AM ALIGNMENT – SELECTOR IN AM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	High side thru .01mfd to AM RF Stator lug of tuning gang. Low side to chassis.	455KC (400∿ Mod.)	(AM) Tuning gang fully open.	AC probe to AM-FM Monaural jack. Common to chassis.	A1, A2, A3, A4	Adjust for maximum deflection.
2.	Loop	1600KC	1600KC	"	A5, A6, A7	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum deflection.
3.	"	600KC	600KC	"	A8, A9, A10	Adjust for maximum deflection. Repeat Step 2.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM—SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.	High side thru 200mmf to FM RF stator lug of tuning gang. Low side to chassis.	10.7MC (Unmod.)	(FM) Point of non-interference.	DC probe to point Ⓐ Common to chassis.	A11, A12 A13, A14 A15, A16	Adjust for maximum deflection.
5.	"	"	"	DC probe thru 1meg to point Ⓑ. Common to chassis.	A17	"
6.	"	"	"	DC probe to point Ⓒ. Common to chassis.	A18	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE—SELECTOR IN FM POSITION

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
4.	High side thru 200mmf to FM RF stator lug of tuning gang. Low side to chassis.	10.7MC (450KC Swp)	(FM) Point of non-interference.	Vert. amp. to point Ⓐ. Low side to chassis.	A11, A12 A13, A14 A15, A16	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown.
5.	"	"	"	Vert. amp. thru 27K to point Ⓑ. Low side to chassis.	A17	"
6.	"	"	"	Vert. amp. to point Ⓒ. Low side to chassis.	A18	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A17 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT—SELECTOR IN FM POSITION

Short Point D to chassis.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	High side thru 270Ω to FM antenna terminal. Low side to chassis.	106MC (Unmod.)	(FM) 106MC	DC probe to point Ⓐ. Common to chassis.	A19, A20 A21	Adjust for maximum deflection.
8.	"	90MC	90MC	"	L5, L4, L3	Adjust for maximum deflection by expanding or compressing coil turns. Repeat Step 7.

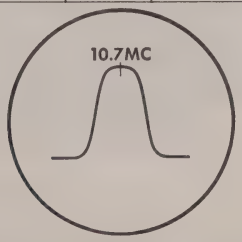


FIG. 1

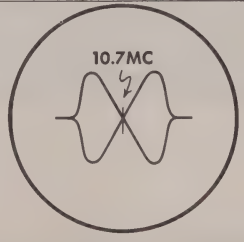
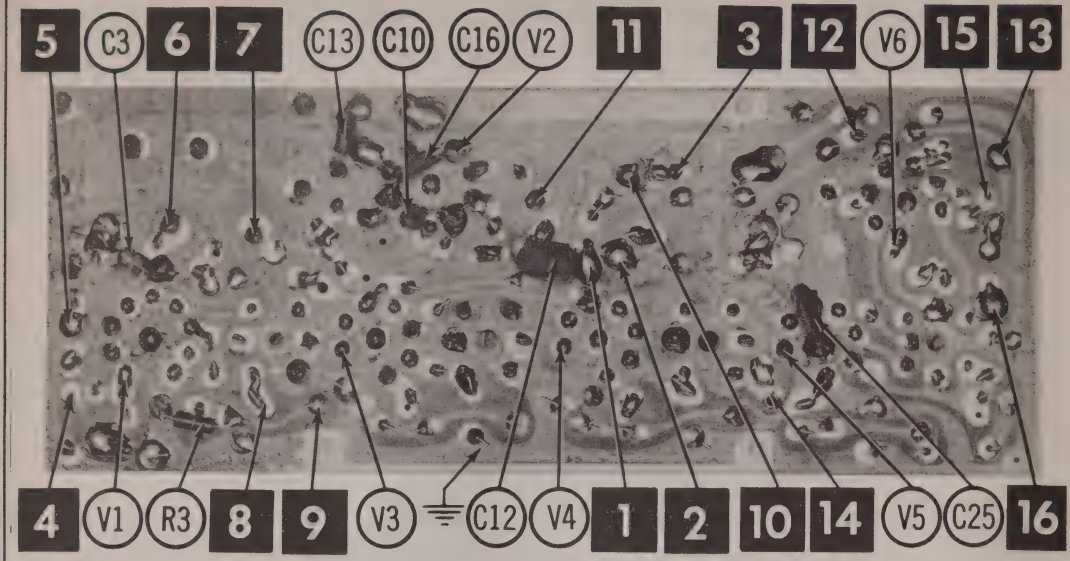


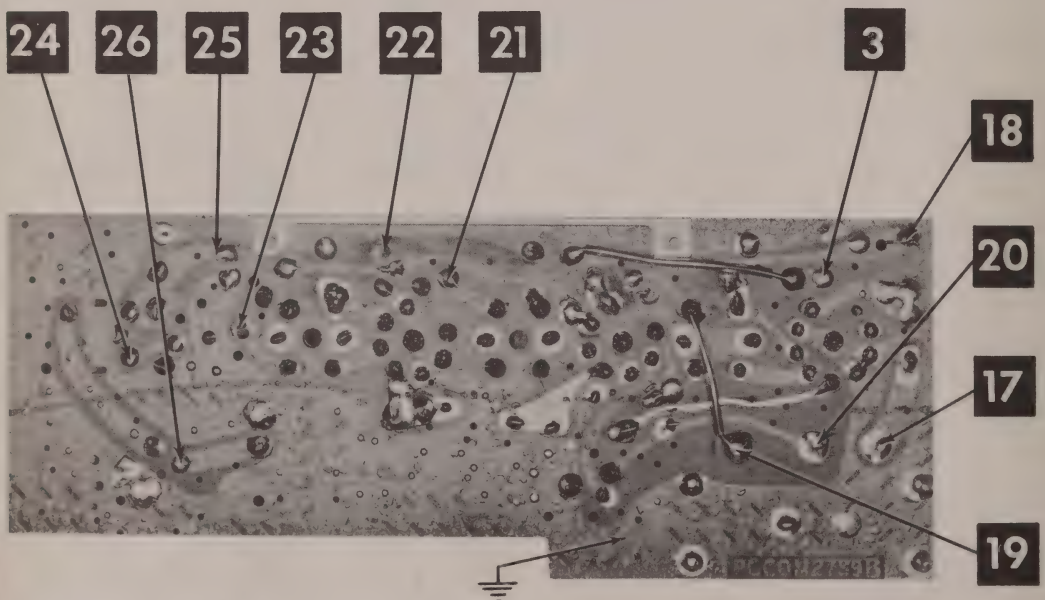
FIG. 2



A Howard W. Sams CIRCUITRACE® Photo

FM PRINTED BOARD

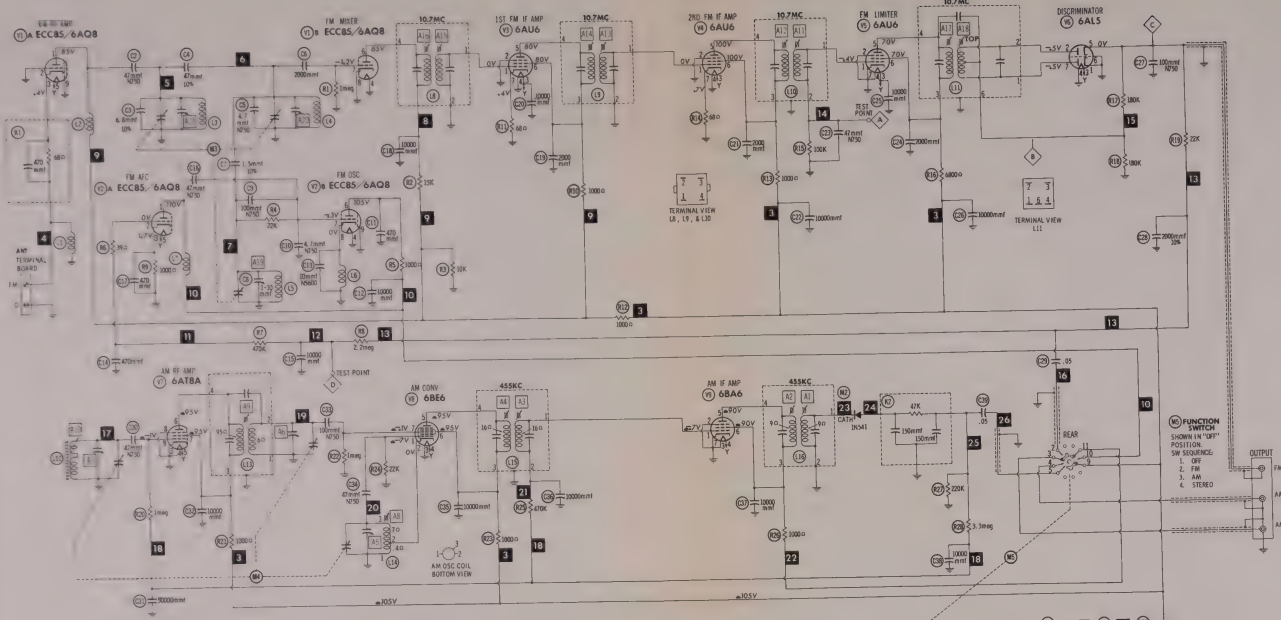
ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



A Howard W. Sams CIRCUITRACE® Photo

AM PRINTED BOARD

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	ECC85 6AQ8	*1700Ω	0Ω	68Ω	0Ω	.1Ω	†1K	1meg	0Ω	0Ω
V2	ECC85 6AQ8	†700Ω	3meg	1000Ω	0Ω	.1Ω	†700Ω	22K	.1Ω	0Ω
V3	6AU6	.8Ω	0Ω	.1Ω	0Ω	†270Ω	†270Ω	68Ω		
V4	6AU6	.8Ω	0Ω	.1Ω	0Ω	†170Ω	†170Ω	68Ω		
V5	6AU6	100K	0Ω	.1Ω	0Ω	†740Ω	†740Ω	0Ω		
V6	6AL5	0Ω	180K	.1Ω	0Ω	360K	0Ω	180K		
V7	6AT8A	NC	NC	0Ω	0Ω	.1Ω	†170Ω	†170Ω	0Ω	4.5meg
V8	6BE6	22K	.4Ω	0Ω	0Ω	.1Ω	†170Ω	†170Ω	1meg	
V9	6BA6	4meg	0Ω	0Ω	0Ω	≈170Ω	≈170Ω	0Ω		

* MEASURED FROM OUTPUT OF M1
≈ MEASURED IN "AM" POSITION
ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt
2. Socket connections are shown as bottom views
3. Measured values are from socket pin to common negative
4. Line voltage maintained at 117 volts for voltage readings
5. Nominal tolerance on component values makes possible a variation of ±5% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM.

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC
with CIRCUITRACE

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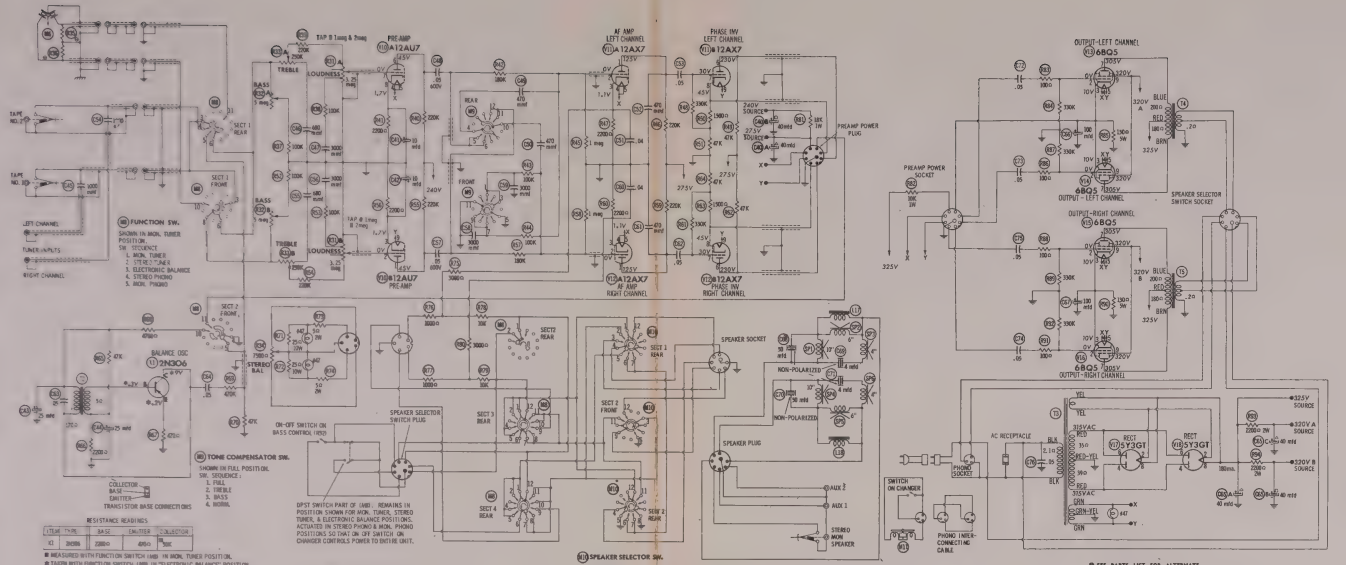
TUNER SCHEMATIC



FUNCTION SW. SHOWN IN MON. TUNER POSITION. SW. SEQUENCE: 1. MON. TUNER 2. STEREO BALANCE 3. ELECTRONIC BALANCE 4. STEREO PHONO 5. MON. PHONO

TONE COMPENSATOR SW. SHOWN IN FULL POSITION. SW. SEQUENCE: 1. FULL 2. TREBLE 3. BASS 4. NORMAL

SPEAKER SELECTOR SW. SHOWN IN STEREO INT. POSITION. SW. SEQUENCE: 1. STEREO INT. 2. STEREO EXT. 3. TAPE AUX. INPUT

DPST SWITCH PART OF LINE1 REMAINS IN POSITION SHOWN FOR MON. TUNER, STEREO TUNER, & ELECTRONIC BALANCE POSITIONS. ACTUATES IN STEREO PHONO & MON. PHONO POSITIONS SO THAT ON OFF SWITCH ON CHANGER CONTROLS POWER TO ENTIRE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1100 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ± 15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected

RESISTANCE READINGS

ITEM	TYPE	BASE	EMITTER	COLLECTOR
Q1	2N306	2300Ω	400Ω	750K

■ MEASURED WITH FUNCTION SWITCH (A8) IN MON. TUNER POSITION.
● TAKEN WITH FUNCTION SWITCH (A8) IN "ELECTRONIC BALANCE" POSITION.

RESISTANCE READINGS (CONT.)

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V10	12AU7	1 250K	0Ω	220Ω	1Ω	1Ω	1 250K	9Ω	220Ω	1Ω
V11	12AX7	1 220K	100K	390Ω	1Ω	1Ω	1 57K	300K	68K	1Ω
V12	12AX7	1 220K	180K	390Ω	1Ω	1Ω	1 57K	300K	68K	1Ω
V13	6BQ5	300K	390K	150Ω	1Ω	1Ω	NC	1 200Ω	NC	1 220Ω
V14	6BQ5	350K	390K	150Ω	1Ω	1Ω	NC	1 180Ω	NC	1 220Ω
V15	6BQ5	350K	390K	150Ω	1Ω	1Ω	NC	1 200Ω	NC	1 220Ω
V16	6BQ5	350K	390K	150Ω	1Ω	1Ω	NC	1 180Ω	NC	1 220Ω
V17	5Y3GT	NC	1	NC	39Ω	NC	35Ω	NC	1	
V18	5Y3GT	NC	1	NC	39Ω	NC	35Ω	NC	1	

1 THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
1† MEASURED FROM PIN 2 OF V18
NC NO CONNECTION

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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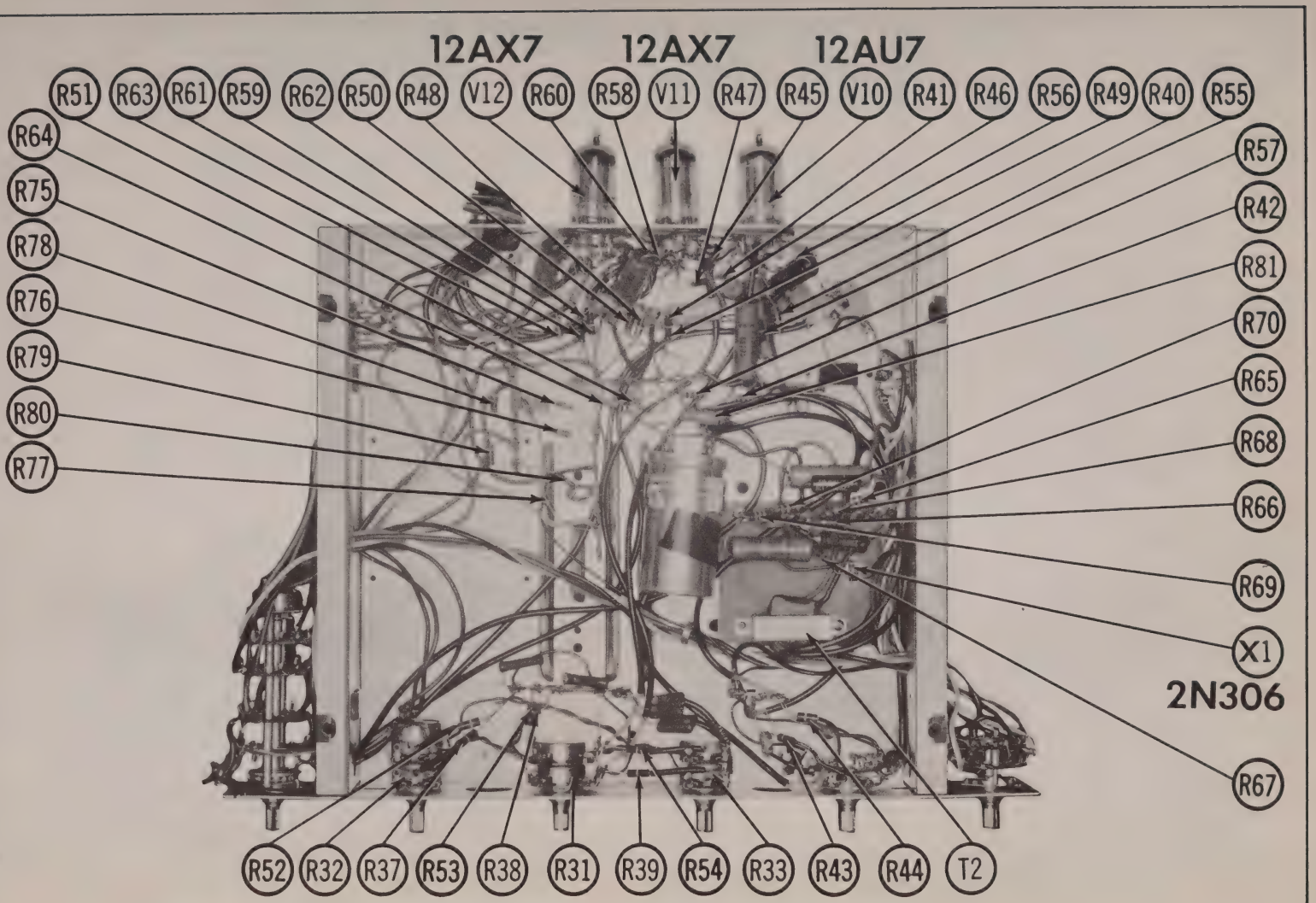
STEELMAN MODEL 2-6541

PREAMP - AMP SCHEMATIC



PREAMP CHASSIS - RESISTOR & TUBE IDENT.

PREAMP PARTS LIST AND DESCRIPTIONS

TUBES

◆ CBS ◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆

ITEM No.	USE	TYPE
V10	Left Channel Preamp. - Right Channel Preamp.	12AU7
V11	Left Channel AF Amp. - Phase Inverter	12AX7
V12	Right Channel AF Amp. - Phase Inverter	12AX7

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N306	Balance Oscillator	2N306	2N649	2N633	2N306	PNP

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	STEELMAN PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C40A	▲40	350	582011	AFH2-57	BO450	FP238	TMD-38	TVL-2737	
B	■40	350							
C41	10	100		PRS1410	BBR10-150	TC42	TD-10-150	TVA-1406	①
C42	10	100		PRS1410	BBR10-150	TC42	TD-10-150	TVA-1406	①
C43	25	12		XPP-12025	NLW30-15	TT25X25	ML30-15	TE-1131	②
C44	25	12		XPP-12025	NLW30-15	TT25X25	ML30-15	TE-1131	②

① Some versions may use 10mfd 25V Part #581023.
② Some versions may use 25mfd 10V Part #581042.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C45	1000		SI 1000	D6-102	BYA10D1	CCD-102	GP210	5HK-D10
C46	680		1468-00068	DD-681	1R5T68	CM-20B-681M	MCJ249	1FM-368
C47	3000		SI 3000	D6-302	BYA10D3	CCD-302	GP230	5HK-D30
C48	.047 600V		P688N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47
C49	470		SI 470	DD-471	BYA10T47	CCD-471	GP347	10TS-T47
C50	470		SI 470	DD-471	BYA10T47	CCD-471	GP347	10TS-T47
C51	.04 200V		P288N-05	DD-403	CUB6S4	4DP-3-403	GEM-414	4TM-S4
C52	470		SI 470	D6-471	BYA10T47	CCD-471	GP347	10TS-T47
C53	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C54	1000		SI 1000	D6-102	BYA10D1	CCD-102	GP210	5HK-D10
C55	680		1468-00068	DD-681	1R5T68	CM-20B-681M	MCJ249	1FM-368
C56	3000		SI 3000	D6-302	BYA10D3	CCD-302	GP230	5HK-D30
C57	.047 600V		P688N-047	DD-473	CUB6S47	6DP-3-473	GEM-6147	6TM-S47
C58	3000		SI 3000	D6-302	BYA10D3	CCD-302	GP230	5HK-D30
C59	3000		SI 3000	D6-302	BYA10D3	CCD-302	GP230	5IIK-D30
C60	.04 200V		P288N-04	DD-403	CUB6S4	4DP-3-403	GEM-414	4TM-S4
C61	470		SI 470	D6-471	BYA10T47	CCD-471	GP347	10TS-T47
C62	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C63	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C64	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	STEELMAN PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R31A	3.25meg*	½	368037					Loudness, Left Channel
B	3.25meg*	½						Loudness, Right Channel

CONTROLS (cont)

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	STEELMAN PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R32A	5meg	½	368038	B-88	AD47-5meg-S		FA56A	Bass, Left Channel
B	5meg	½		SR-88	Not Req.		RU56A	Bass, Right Channel
C	Shaft			Not Req.	KSS-3		CS3500	
D	Switch			KR-1	SWE-12		U341	Power Off-On
R33A	250K	½	368035	B-50	AD47-250K-S		FA254L	Treble, Left Channel
B	250K	½		SR-50	Not Req.		RU254L	Treble, Right Channel
C	Shaft			Not Req.	KSS-3		CS3500	
R34A	7500Ω	½	360225	B-13	A47-7500-S	Q11-115	U20	Balance
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	

* Taps at 1meg & 2meg.

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R35	470K	Note 1
R36	470K	Note 1
R37	100K	
R38	100K	
R39	220K	
R40	220K	
R41	2200Ω	
R42	180K	
R43	100K	
R44	100K	
R45	1meg	
R46	220K	
R47	2200Ω	
R48	330K	
R49	47K	
R50	1500Ω	

ITEM No.	RATING	REMARKS
R51	47K	
R52	100K	
R53	100K	
R54	220K	
R55	220K	
R56	2200Ω	
R57	180K	
R58	1meg	
R59	220K	
R60	2200Ω	
R61	330K	
R62	47K	
R63	1500Ω	
R64	47K	
R65	47K	
R66	2200Ω	

ITEM No.	RATING	REMARKS
R67	470Ω	
R68	4700Ω	
R69	470K	
R70	47K	
R71	25Ω 10W	IRC #PW10-25Ω
R72	25Ω 10W	IRC #PW10-25Ω
R73	5Ω 2W	
R74	5Ω 2W	
R75	3000Ω	
R76	1000Ω	
R77	1000Ω	
R78	10K	
R79	10K	
R80	3000Ω	
R81	18K 1W	

Note 1. Not used in some versions.

CROSSOVER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA						
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 ∿)	STEELMAN PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L17		.3Ω	250uh	455071						
L18		.3Ω	250uh	455071						

TRANSFORMER (BALANCED OSC.)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC.	STEELMAN PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	1	300	430330						

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA									
	STEELMAN PART No.	ASTATIC PART No.		ELECTRO-VOICE PART No.		JENSEN PART No.		SONOTONE PART No.	
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE
M6		80TS		26ST					

PREAMP PARTS LIST AND DESCRIPTIONS (Continued)

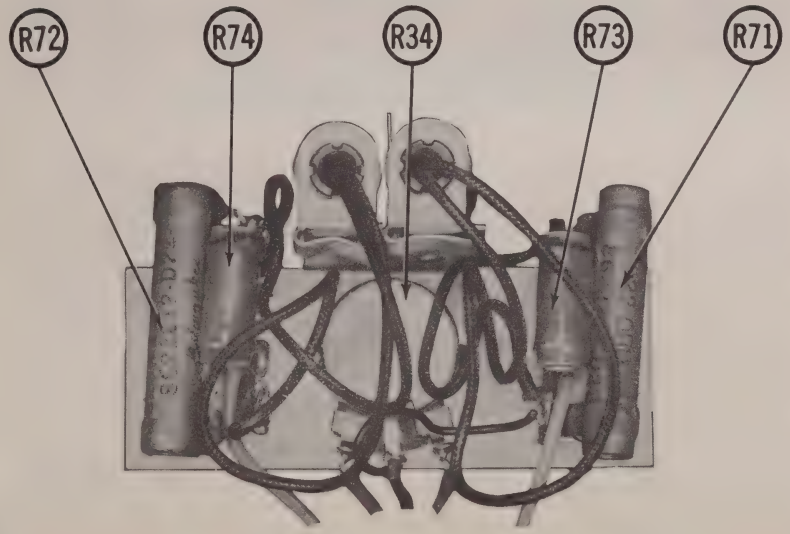
PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	STEELMAN PART No.	CLEVITE WALCO PART No.	JENSEN PART No.	
M7	(78RPM)		CRA-57 † or CRA-57D ♦	† Jewel ♦ Diamond
	(LP)		CRA-57X † or CRA-57XD ♦	

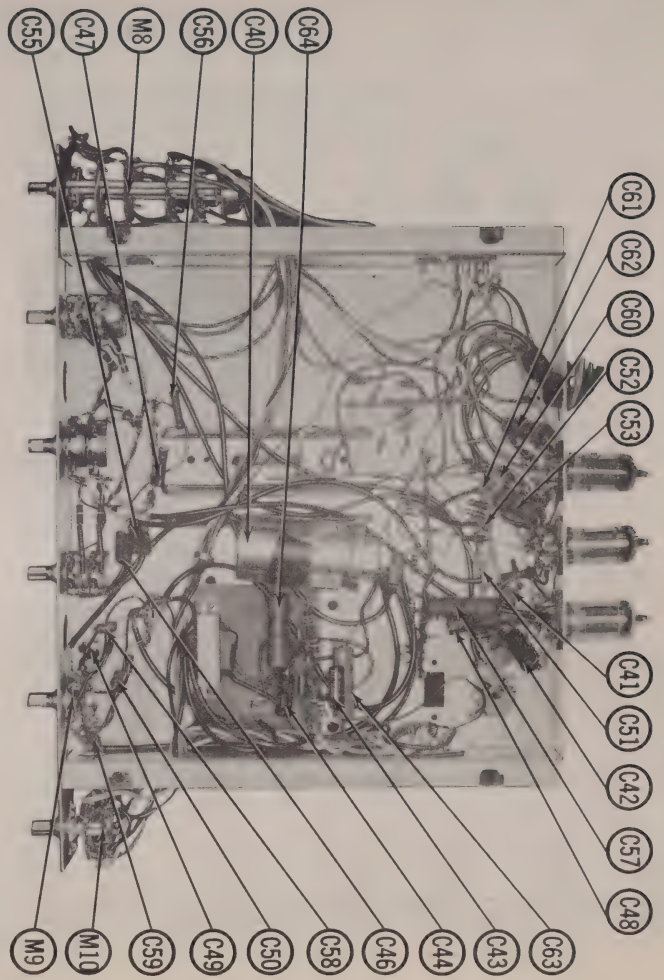
MISCELLANEOUS

ITEM No.	PART NAME	STEELMAN PART No.	NOTES
M8	Switch	370059	Function, Rotary Wafer
M9	Switch	370053	Tone Compensating, Rotary Wafer Type
M10	Switch	370060	Speaker, Rotary Wafer Type



STEREO BALANCE CONTROL ASSEMBLY

PREAMP CHASSIS—BOTTOM VIEW



AMP PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V13	Left Channel Output	6BQ5	V16	Right Channel Output	6BQ5
V14	Left Channel Output	6BQ5	V17	Rectifier	5Y3GT
V15	Right Channel Output	6BQ5	V18	Rectifier	5Y3GT

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA STEELMAN PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C65A	▲40	450	583026	AFH3-44	C0350	FP377	TMT-40	TVL-3787	
B	■40	450							
C	▲40	450							
C66	100	25	581027	PRS1270	BBR100-25	TC2501	TD-100-25	TVA-1207	
C67	100	25	581027	PRS1270	BBR100-25	TC2501	TD-100-25	TVA-1207	
C68	50	50 NP	581048	PRS7450	BR10015 †	TC3501 †		TVANS-1308.1*	
C69	4	50 NP	581043	NP-PRS50VNP4	BBR8-150 †	TCN504		TVAS-1302.5 *	
C70	50	50 NP	581048	PRS7450	BR10015 †	TC3501 †		TVANS-1308.1*	
C71	4	50NP	581043	NP-PRS50VNP4	BBR8-150 †	TCN504		TVAS-1302.5 *	

† Use 2 units. Connect negative terminals together. Connect positive terminals into circuit the same as the original non-polarized unit.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C72	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S5
C73	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S5
C74	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S5
C75	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S5
C76	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S5

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R82	10K 1W	
R83	100Ω	
R84	330K	
R85	130Ω 5W	IRC #PW5-130Ω
R86	100Ω	

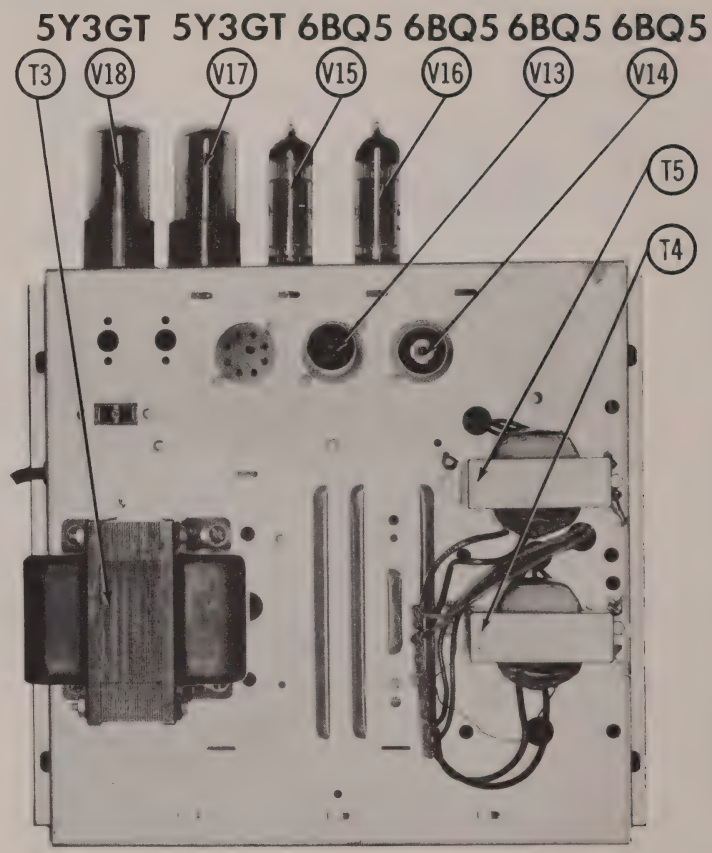
ITEM No.	RATING	REMARKS
R87	330K	
R88	100Ω	
R89	330K	
R90	130Ω 5W	IRC #PW5-130Ω
R91	100Ω	

ITEM No.	RATING	REMARKS
R92	330K	
R93	2200Ω 2W	
R94	2200Ω 2W	

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	SEC. 1	SEC. 2	REPLACEMENT DATA STEELMAN PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T3	117V @ 1.2A	600 VCT @ .180A	5V @ 4A	440020						
	SEC. 3	SEC. 4	SEC. 5							
	6.3VCT @ 4.3A									

AMP CHASSIS - TOP VIEW



AMP PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	STEELMAN PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T4	5100Ω CT	6-8Ω CT	430565							
T5	5100Ω CT	6-8Ω CT	430565							

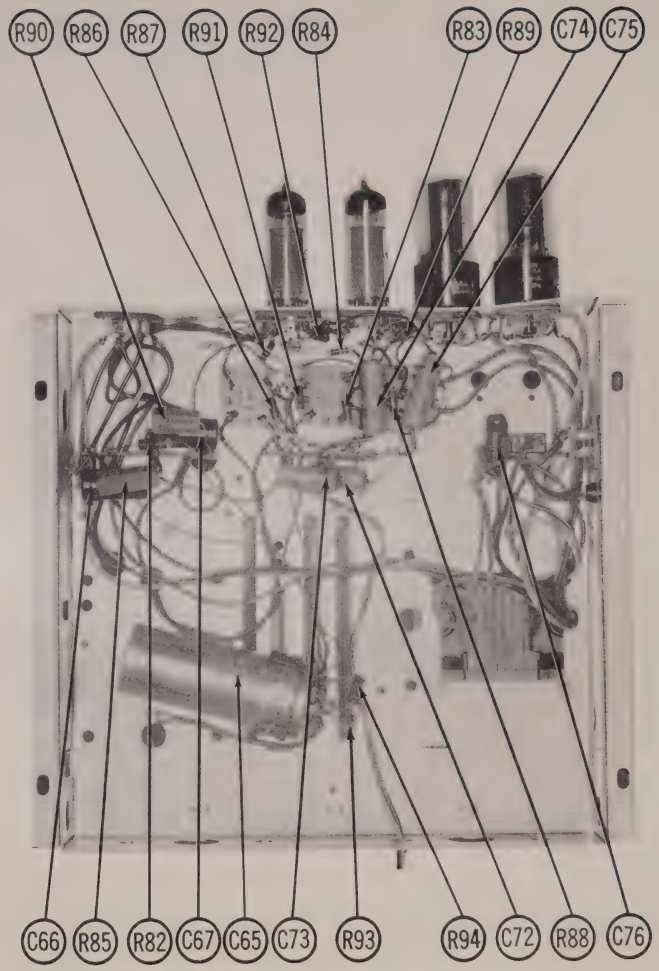
SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	STEELMAN PART No.	QUAM PART No.	
SP1	10"	PM	3-4Ω	409007	10A6A	
SP2	6"	PM	3-4Ω	406001	6A31	
SP3	4"	PM	3-4Ω	404009	4A1T	
SP4	10"	PM	3-4Ω	409007	10A6A	
SP5	6"	PM	3-4Ω	406001	6A31	
SP6	4"	PM	3-4Ω	404009	4A1T	

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

AMP CHASSIS—BOTTOM VIEW



PHOTOFACT® Folder

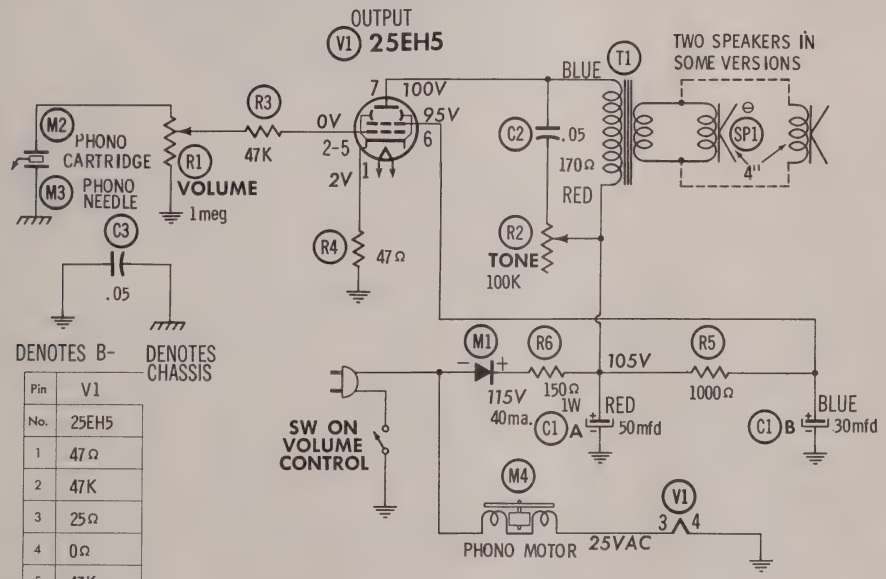
**STEELMAN
MODELS 102, 103**

STEELMAN
MODELS 102, 103

MODEL 102

TRADE NAME	Steelman Models 102, 103
MANUFACTURER	Steelman Phono & Radio Co., 2-30 Anderson Ave., Mount Vernon, N. Y.
TYPE SET	AC Operated One Tube Phono Amplifier With 4 Speed Manual Record Player
POWER SUPPLY	110 - 120 Volts AC, 60 Cycles RATING 50 Watts, .58 Amp. @ 117 Volts AC (With Motor)

STEELMAN
MODELS 102, 103



Pin No.	V1
1	47Ω
2	47K
3	25Ω
4	0Ω
5	47K
6	†1100Ω
7	†320Ω

† MEASURED FROM OUTPUT OF M1.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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JR 965

SET 505 FOLDER 15

PARTS LIST AND DESCRIPTIONS

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

TUBES

◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Output	25EH5			

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	STEELMAN PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	50	150	582005	PRS4500	BBRD5315	WD210	TDLD-8	TVA-2450	
B	30	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S5
C3	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S5

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	STEELMAN PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	1meg	½	360281	B-70-S	A47-1meg-Z	Q13-137	U53	Volume
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
C	Switch			Not Req.	SWE-12	76-1	US-26	Power Off-On
R2A	100K	½	360250	B-41	A47-100K-Z	Q13-128	U39	Tone
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R3	47K	
R4	47Ω	

ITEM No.	RATING	REMARKS
R5	1000Ω	

ITEM No.	RATING	REMARKS
R6	150Ω 1W	

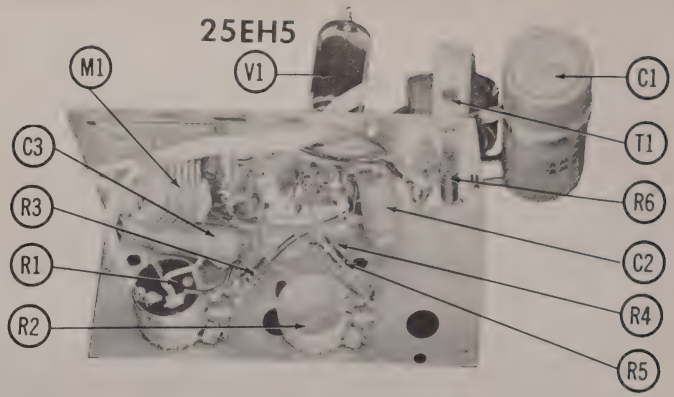
TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	STEELMAN PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2500Ω	3-4Ω	430330	A-3025	AU-605	A-3332	24S53	S-12X	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	STEELMAN PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω	404003	4A07	* Model 103
	4"	PM	3-4Ω	*404003	4A07	

CHASSIS—BOTTOM VIEW



RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					NOTES
	CURRENT (Measured)	STEELMAN PART No.	ITT PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	
M1	.040A	380001 *	1234A/H *	1N1763 ♦	65 *	SR200 ♦	* Selenium ♦ Silicon

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA							
	STEELMAN PART No.	ASTATIC PART No.		ELECTRO-VOICE PART No.		JENSEN PART No.		SONOTONE PART No.	
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE
M2		420-TS-TB	N8-1 & N8-3	46T				12TH-S	

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA		REMARKS
	STEELMAN PART No.	JENSEN PART No.	
M3		VA29 † or VA29D and VA-29LP † or VA-29LPD ♦	† Jewel ♦ Diamond

MISCELLANEOUS

ITEM No.	PART NAME	STEELMAN PART No.	NOTES
M4	Motor	311042	G 1 (4 Speed) Turntable Drive

CABINETS & CABINET PARTS

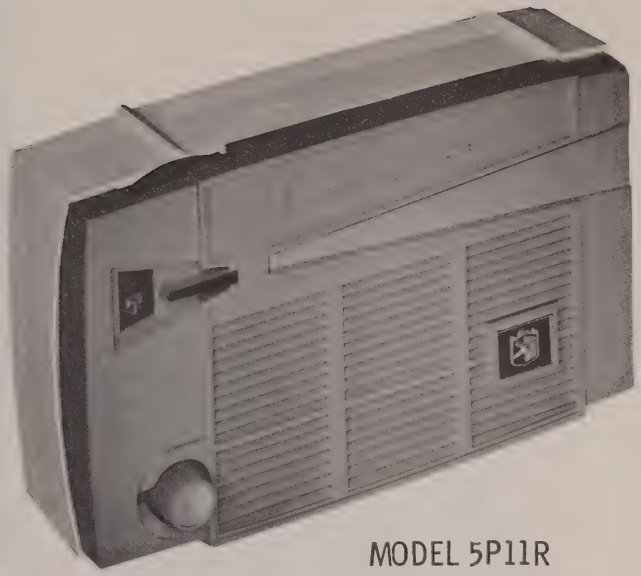
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	270101	Red; Volume, Tone
Cabinet	241450	Coral
Cabinet	241460	Blue

PHOTOFACT® Folder with CIRCUITRACE®

SYLVANIA MODELS 5P10B, 5P11R, T (Ch. 1-637-1)

SYLVANIA MODELS 5P10B, 5P11R, T (Ch. 1-637-1)



MODEL 5P11R

SYLVANIA MODELS 5P10B, 5P11R, T (Ch. 1-637-1)

TRADE NAME	Sylvania Models 5P10B, 5P11R, 5P11T (Ch. 1-637-1)
MANUFACTURER	Sylvania Home Electronics, Div. of Sylvania Electric Products, Inc., 700 Ellicott Street, Batavia, N. Y.
TYPE SET	Battery Operated Transistorized Portable AM Receiver
POWER SUPPLY	6 Volts DC
TUNING RANGE—BROADCAST	540 - 1650KC RATING 30 MA@6 Volts DC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:
A1, A2..... GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989
WALSCO #2515, 2531, 2532
A3.....GENERAL CEMENT #9440
A4, A5.....GENERAL CEMENT #5000, 5003, 5066, 8276, 8290, 9087, 9089
WALSCO #2512, 2525, 2528

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	Loop	455KC (400~ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
2.	"	600KC	Tune to 600KC Signal.	"	A3	Adjust for maximum output while rocking tuning gang.
3.	"	1650KC	Tuning gang fully open.	"	A4	Adjust for maximum output.
4.	"	1450KC	Tune to 1450KC signal.	"	A5	"

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JF979

SET 505 FOLDER 16

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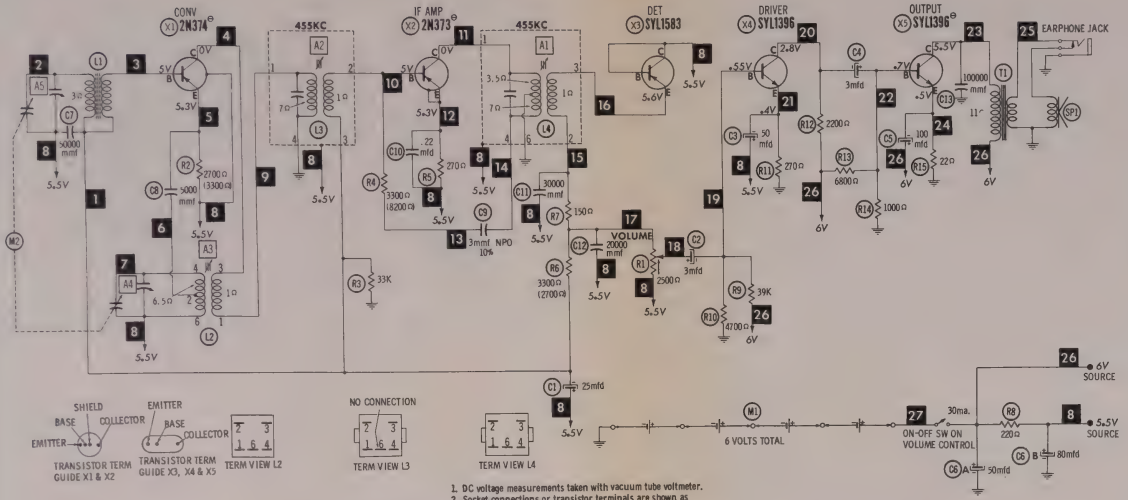

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections or transistor terminals are shown as bottom views.
3. Measured values are from socket pin or terminal to common ground.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

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SYLVANIA MODELS 5P10B, 5P11R, T (Ch. 1-637-1)

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N374 †	Converter		2N374		2N374	PNP
X2	2N373 ♦	IF Amplifier		2N373		2N373	PNP
X3	SYL1583	Detector			CK879	SYL1583	PNP
X4	SYL1396	Driver				SYL1396	NPN
X5	SYL1396 *	Output				SYL1329	NPN

† Chassis Code 00 use SYL1251.
♦ Chassis Code 00 use SYL1250.
* Some versions may use type SYL1329 in this application.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	SYLVANIA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	25	3	161-1049	PWE3025	NLW25-10	TT3X25	ML25-3	TE-1055	
C2	3	6	161-1037	PWE6003	NLW3-25	TT6X3	ML4-6	TE-1082	
C3	50	6	161-1063	PWE6050	NLW50-10	TT6X50	ML50-6	TE-1100	
C4	3	6	161-1037	PWE6003	NLW3-25	TT6X3	ML4-6	TE-1082	
C5	100	6	161-1064	PWE6100	NLW100-12	TT6X100	ML100-6	TE-1102	
C6A	50	6	161-2023	BCD10X8050		PETA2385			
B	80	6							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C7	50000		BPD-05	DD-503	H-05S5	IDP-2-503	GP150	5HK-S50
C8	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C9	3 NPO 10%		NPO-DI 3.0	DTZ-3R3	C10V3C	CCTO-3R3	CNO-533	10TCC-3R3
C10	.22mfd 3V			UK-224				HY-125
C11	30000		BPD-03	DD-303	BYB6S3	CCD-303	GP130	5HK-S30
C12	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C13	100000				H-05P1	IDP-2-104	TA-010	5HK-P10

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	SYLVANIA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	2500Ω	1/4	152-0062					Volume & Switch

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R2	2700Ω	(3300Ω) *
R3	33K	
R4	3300Ω	(8200Ω) *
R5	270Ω	
R6	3300Ω	(2700Ω) †

ITEM No.	RATING	REMARKS
R7	150Ω	
R8	220Ω	
R9	39K	
R10	4700Ω	
R11	270Ω	

ITEM No.	RATING	REMARKS
R12	2200Ω	
R13	6800Ω	
R14	1000Ω	
R15	22Ω	

* Used in Code 00 Chassis.
† Alternate Value.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		SYLVANIA PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loopstick	581-0019				
L2	Osc. Coil	113-0047				
L3	Input IF Trans.	121-0030				
L4	Output IF Trans.	122-0033				

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	SYLVANIA PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	10Ω	3-4Ω	143-0073						

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	SYLVANIA PART No.	QUAM PART No.	
SP1	3½"	PM	3-4Ω	539-0353		

BATTERIES

ITEM No.	VOLTAGE	SYLVANIA PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	1.5V	*		930 *		1015 *		M-15R *	* 4 Required

MISCELLANEOUS

ITEM No.	PART NAME	SYLVANIA PART No.	NOTES
M2	Tuning Cap. Printed Board	170-0025 32-96304-2	2 Gang

CABINETS & CABINET PARTS

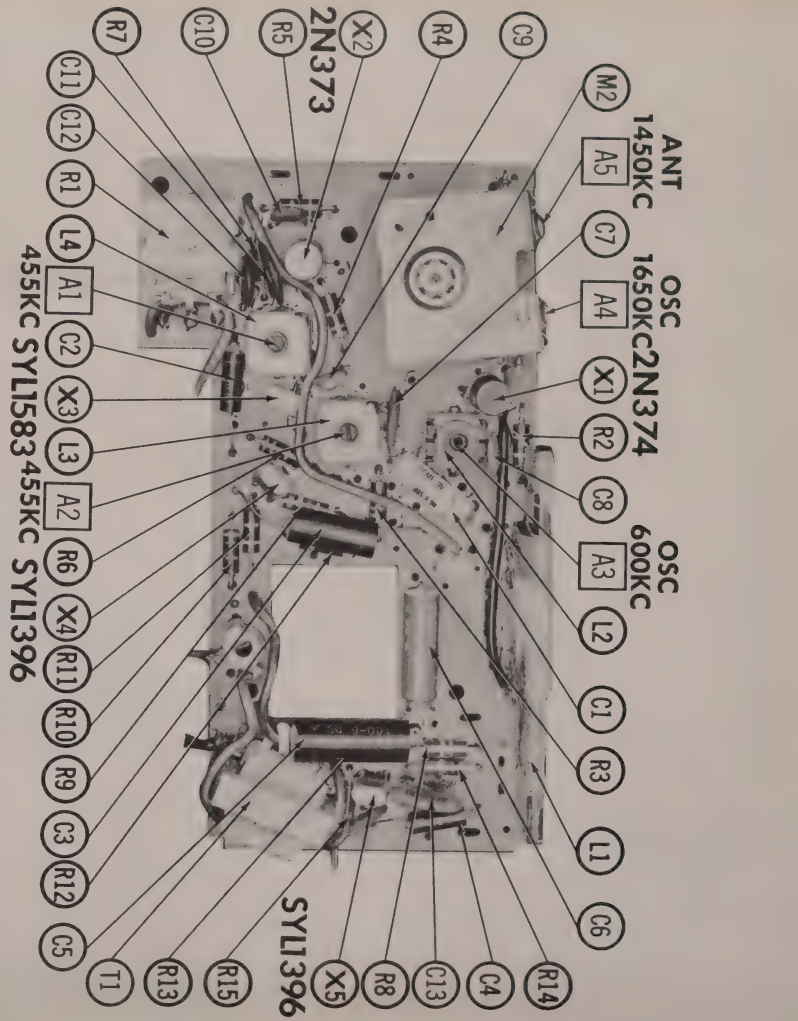
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

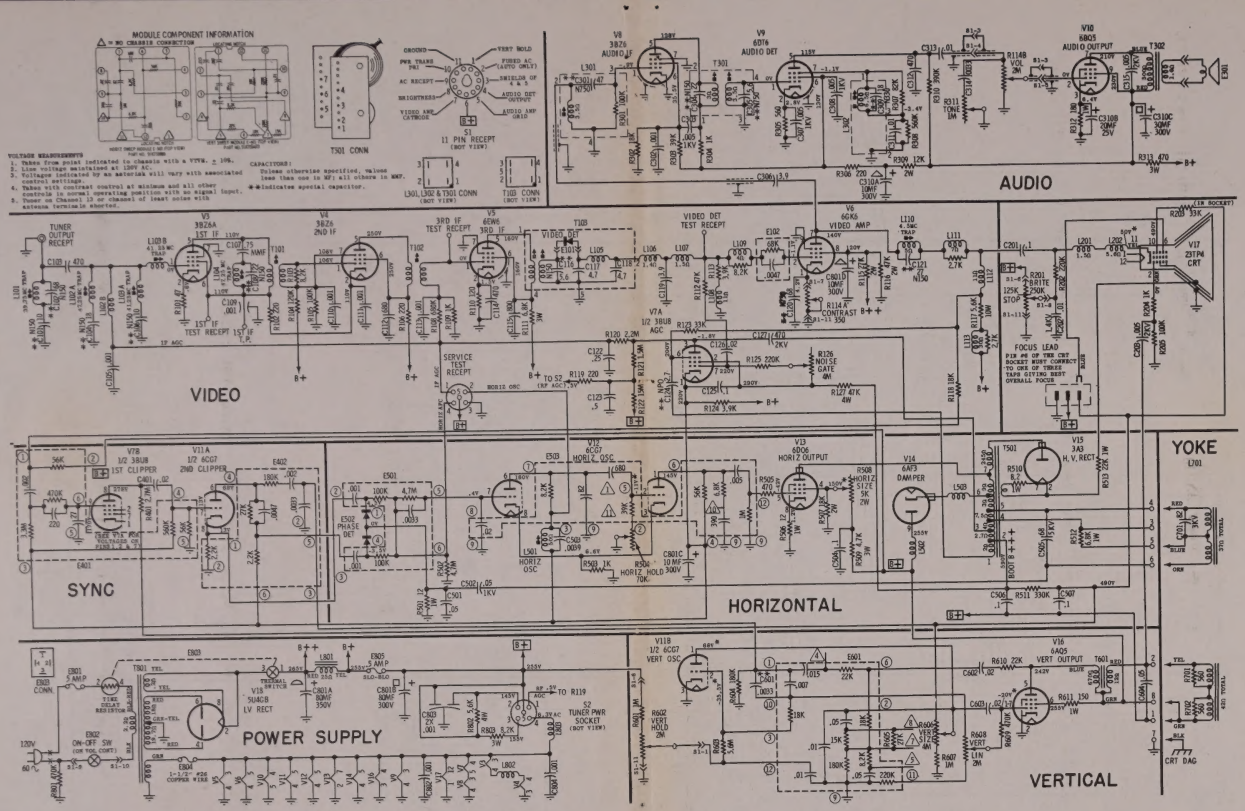
NAME	PART NO.	DESCRIPTION
Knob	741-0049	Tuning
Knob	742-0037	Volume, Model 5P10B
Knob	742-0036	Volume, Model 5P11R
Knob	742-0035	Volume, Model 5P11T
Dial Glass	489-0035	
Cabinet Back	822-0041	Models 5P10B, 5P11R
Cabinet Back	822-0042	Model 5P11T
Cabinet Front	822-0045	Model 5P10B
Cabinet Front	822-0047	Model 5P11R
Cabinet Front	822-0046	Model 5P11T

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

CHASSIS—TOP VIEW

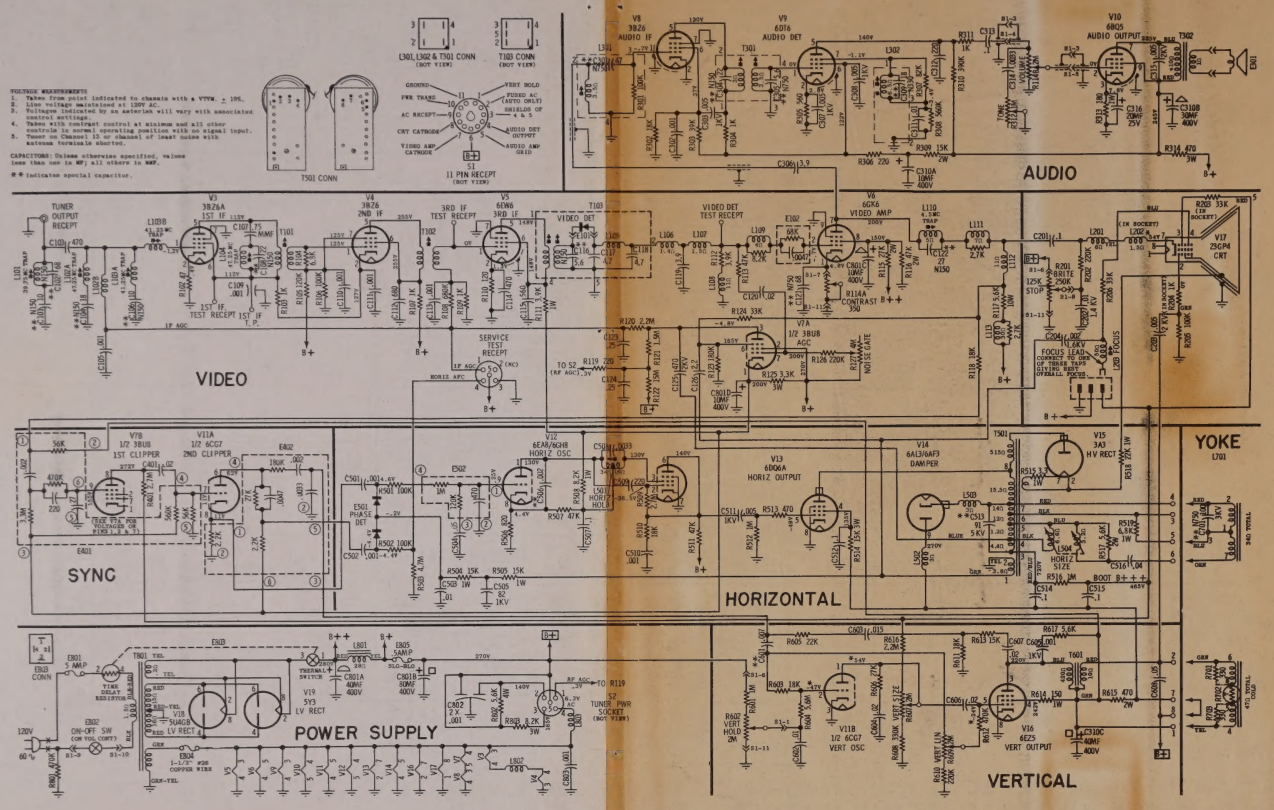



MODULE COMPONENT INFORMATION
T501 CONN
11 PIN RECEPT (BOT VIEW)
L301,L302 & T301 CONN (BOT VIEW)
T1D1 CONN (BOT VIEW)
VOLTAGE MEASUREMENTS
1. Taken from point indicated to chassis with a VTVM. ± 10%.
2. Line voltage maintained at 120 V rms.
3. Voltages followed by an asterisk will vary with associated control settings.
4. Taken with contrast control at minimum and all other controls in normal operating position with no signal input.
5. Tuner on Channel 13 or channel of least noise with antenna terminals shorted.
CAPACITORS:
Unless otherwise specified, values less than one is MF; all others in MMF.
★Indicates special capacitor.
V8 3BZ6 AUDIO DET
V9 6DT6 AUDIO DET
V10 6BQ5 AUDIO OUTPUT
AUDIO
V5 3BZ6A 1ST IF
V4 3BZ6 2ND IF
V6 6EW6 3RD IF
VIDEO DET
V6 6GK6 VIDEO AMP
V17 23TP4 CRT
TUNER OUTPUT RECEPT
VIDEO
V7A 1/2 3BU8 AGC
SERVICE TEST RECEPT
FOCUS LEAD
V7B 1/2 3BU8 1ST CLIPPER
V11A 1/2 6CG7 2ND CLIPPER
V12 6CG7 HORIZ. OSC.
V13 6DQ6 HORIZ OUTPUT
V14 6AF3 DAMPER
V15 3A3 H.V. RECT.
YOKE
SYNC
HORIZONTAL
V11B 1/2 6CG7 VERT OSC
V16 6AQ5 VERT OUTPUT
VERTICAL
POWER SUPPLY
V18 5U4GB LV RECT
TUNER PWR SOCKET (BOT VIEW)
CRT DAG

MOTOROLA MODELS Y23C4B, M, W, Y23C5CW, Y23C6B, M, Y23C7CW, Y23K28B, M, W, Y23K29B, M, W, Y23K30B, M, Y23K31CW, Y23K32M, W, Y23K33B, M, W, Y23K34CW, Y23T2B, BZ, CH, M, W, 23C4B, M, W, 23C5CW, 23C6B, M, 23C7CW, 23K28B, M, W, 23K29B, M, W, 23K30B, M, 23K31CW, 23K32M, W, 23K33B, M, W, 23K34CW, 23T2B, BZ, CH, M, W, (CH. RTS-568, Y, TS-568, Y)

Schematic Diagram Courtesy of Motorola Inc.

MOTOROLA



MOTOROLA MODELS Y23K40CW, Y23K41W, Y23K42W, Y23K43W, Y23K44W, Y23K45W, Y23K46MB,
23K40CW, 23K41W, 23K42W, 23K43W, 23K44W, 23K45W, 23K46MB (CH. VTS-569, Y)

Schematic Diagram Courtesy of Motorola Inc.

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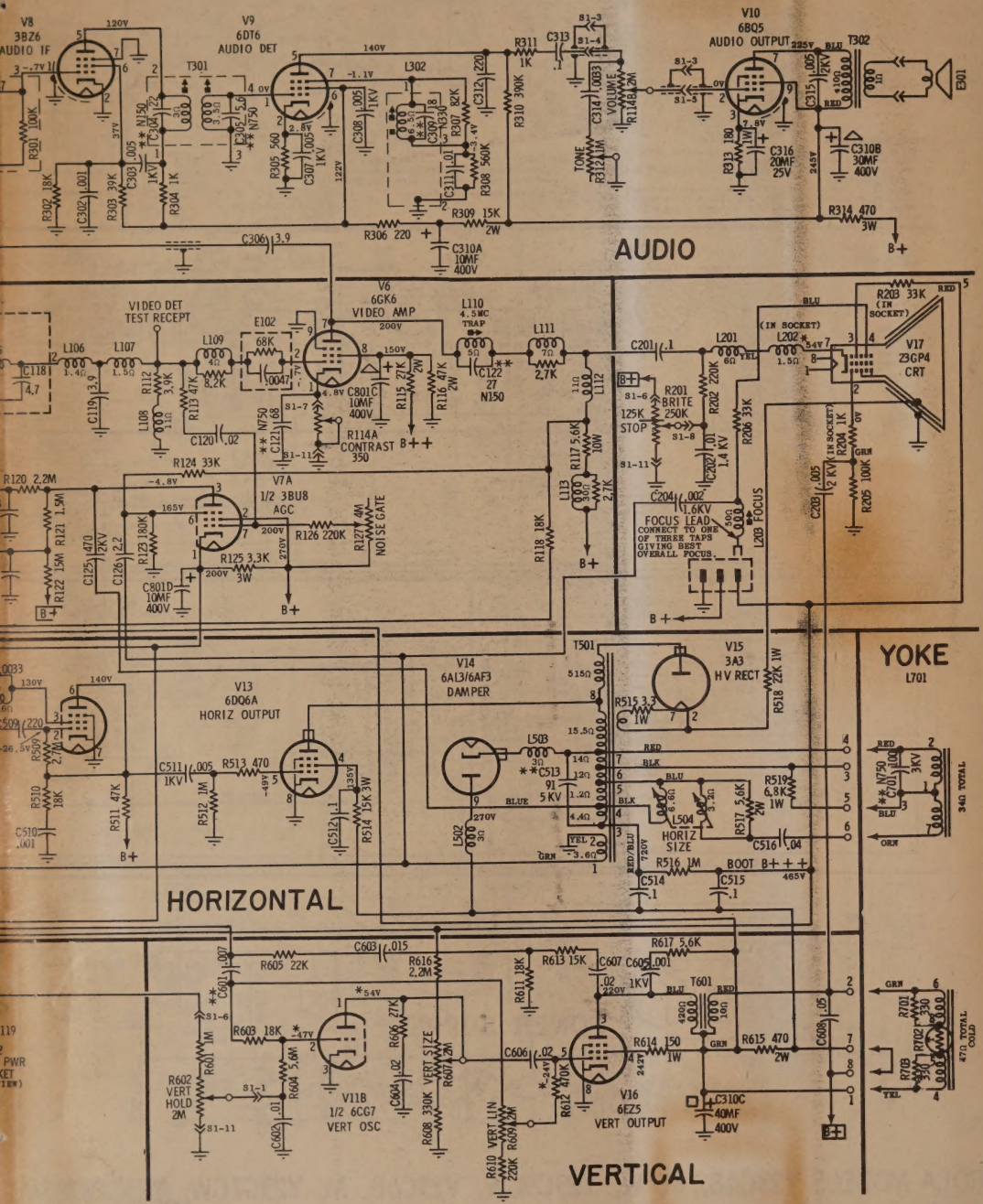

45W, Y23K46MB,
'Y)

Schematic Diagram Courtesy of Motorola Inc.